

PURCHASING

SEPTEMBER, 1947

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W. H. ROEMER:
PURCHASING FOR A
PROFIT
See Page 89

Pages 83-87

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A CONOVER-MAST PUBLICATION • 50 CENTS

Make 1 Call



GET



COST-CUTTING HELPS

INCREASE PRODUCTION . . . improve quality . . . and *cut costs, too!* You can do it . . . no matter what you make or where you are located . . . with these three helps from Texaco—

1. *Service-tested Texaco lubricants*—a complete line to keep your metal-working machines, hydraulic mechanisms, motors, prime movers—*all* plant machinery and equipment—operating at top efficiency and rockbottom maintenance costs.
2. *Texaco Lubrication Engineering Service*—to assure the right use of the right lubricants

everywhere . . . to cooperate with your engineers in increasing output and reducing costs.

3. *Dependable local deliveries*—promptly from your nearby Texaco distributing plant . . . eliminating costly delays.



One call brings you all these benefits. Telephone the nearest of the more than 2500 Texaco distributing plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, New York.

VISIT TEXACO at the CHICAGO MACHINE TOOL SHOW • September 17-26 • Dodge Chicago Plant • Booth—13-C



TEXACO Lubricants, Fuels and Lubrication Engineering Service

Tune in...TEXACO STAR THEATRE presents the TONY MARTIN SHOW every Sunday night. See newspaper for time and station.

PUR
N. Y.

CENTURY MOTORS Deliver Dependable Power

No Matter What the Job!

From the precision high speed production of an automatic screw machine to the rugged power of a large press, there's a Century motor with the stamina to stay on the job.

Throughout their wide range of types and sizes Century motors are ruggedly built. Rigid frames, accurately machined feet, large shafts, accurate alignments, adequate ventilation system and good mechanical and electrical balance — all contribute to their outstanding performance.

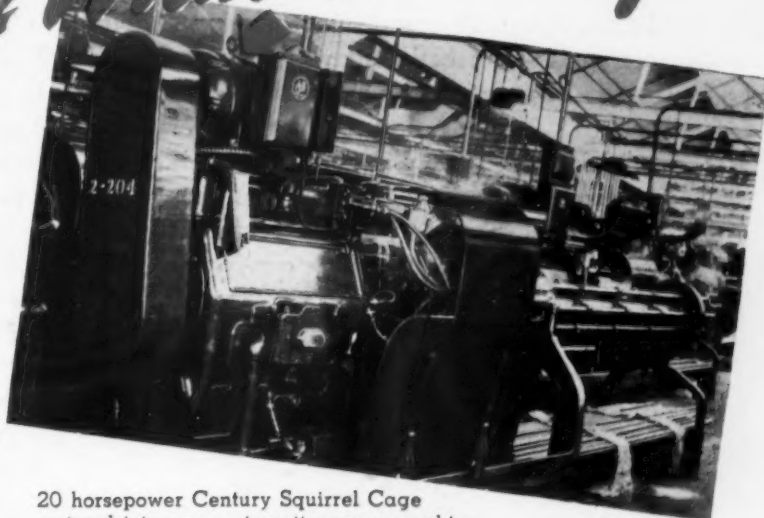
Century builds a complete line of fractional and integral horsepower electric motors, polyphase, single phase and direct current, in the popular sizes to meet the requirements of industrial production, processing, commercial and appliance needs.

Specify Century motors for all your electric power requirements.

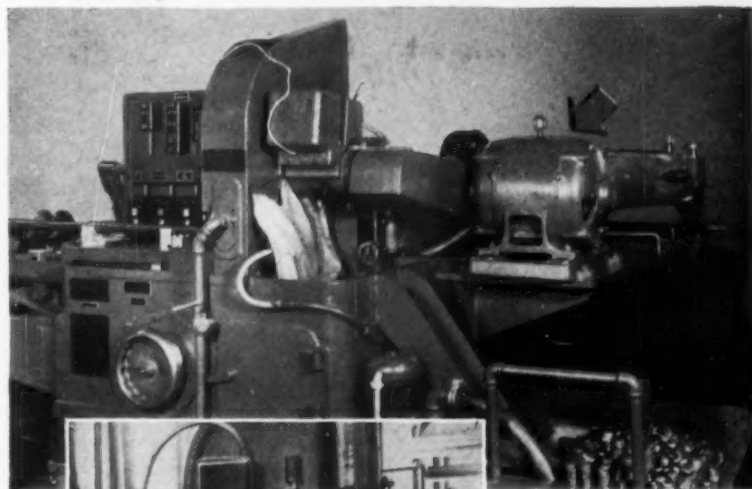


Century Electric Company

1806 Pine St., St. Louis 3, Mo.
Offices and Stock Points in Principal Cities



20 horsepower Century Squirrel Cage motor driving an automatic screw machine.



10 horsepower Century Squirrel Cage motor driving an abrasive cut-off machine.



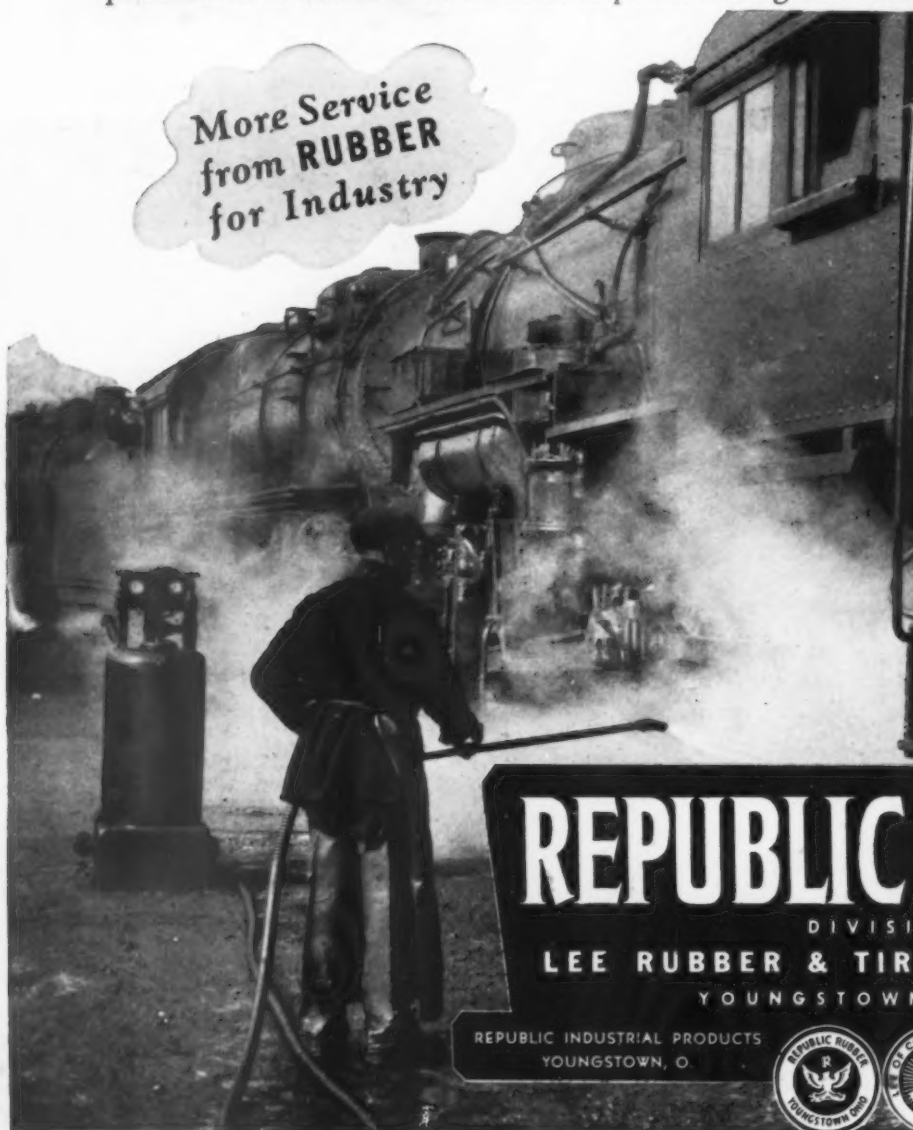
7½ horsepower Century Squirrel Cage motor driving a pump on a hydraulic press.

no Steam Bath for Workmen

IT TAKES the peak safety factor built into Republic Steam Hose for complete protection of workmen against an unarranged steam bath. Live, high pressure steam, coursing through flexible conductors on pile-driving, heating, fire fighting, cleaning and thawing operations, and other work, calls for greatest care in selection of the hose. Republic Hose is both built and sold for the specific job, on the basis of maximum working pressures. Each recommended construction incorporates the most advanced principles of design and highest quality materials, and is made with a functional strength far in excess of that required for the operating conditions. Under severest requirements, maximum safety is afforded by internal plies of asbestos cord and external, wire-wound protecting armor. Consult your Republic Distributor for this assured performance in Steam Hose or other Republic Belting and Hose.

1. Thick tube of special rubber compounded for high heat resistance and ability to retain flexibility.
2. Plies of strong, hard-woven duck, equalized by applying on a bias for maximum pressure resistance and insulated against heat by impregnation with special rubber.
3. Heavy, abrasion-resistant cover takes endless punishment and external wear.

More Service
from RUBBER
for Industry



REPUBLIC RUBBER

DIVISION

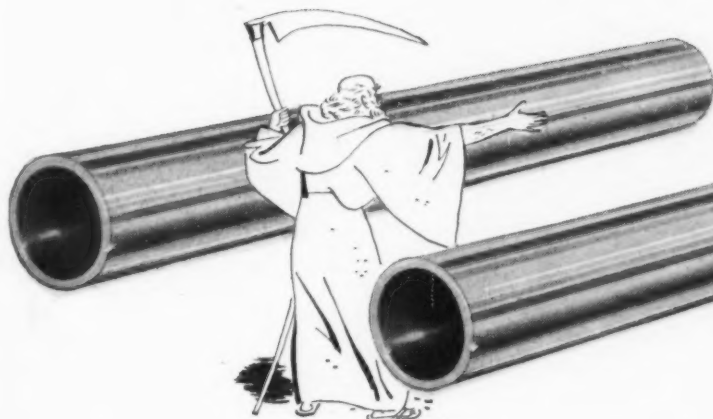
LEE RUBBER & TIRE CORPORATION

YOUNGSTOWN 1, OHIO

REPUBLIC INDUSTRIAL PRODUCTS
YOUNGSTOWN, O.

LEE DELUXE TIRES AND TUBES
CONSHOHOCKEN, PA.

Only time can tell them apart



ROLLS and symmetrical machinery parts that are *centrifugally* cast by Shenango-Penn and those produced by ordinary methods may *look* identical. But time, time in service, will show you a big difference!

For the Shenango-Penn centrifugal process makes metals more homogeneous . . . gives them a generous extra measure of the very qualities that are so important in tough services: measurably greater tensile strength to better withstand stress and shock, greater density for prolonged wear-life and resistance to abrasion and corrosion, and a freedom from porosity, sand inclusions and blow holes that rounds out a picture of unsurpassed performance every time.

FREE BULLETIN No. 143 tells all about our made-to-order centrifugal castings, ferrous or non-ferrous, small or large, rough, semi or finish machined; tells also about savings right from the blueprint stage on through.

FREE BULLETIN No. 145 tells all about our standard centrifugally cast bushing stock, in all popular sizes, always ready for immediate delivery.

Send today for either or both of these free bulletins.

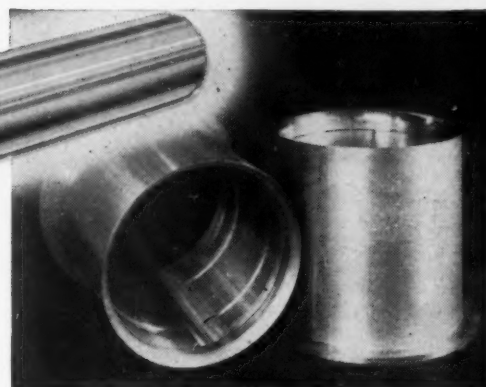
SHENANGO-PENN MOLD COMPANY
2471 WEST THIRD STREET • DOVER, OHIO
Executive Offices: Pittsburgh, Pa.



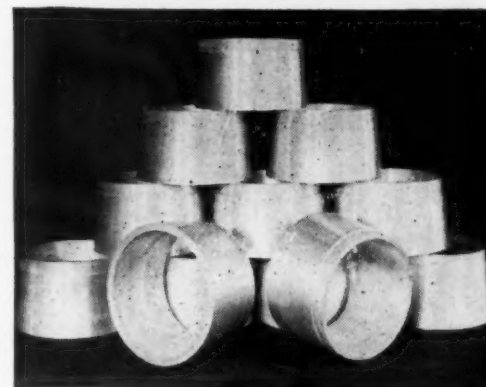
**ALL BRONZES • MONEL
METAL • ALLOY IRONS**



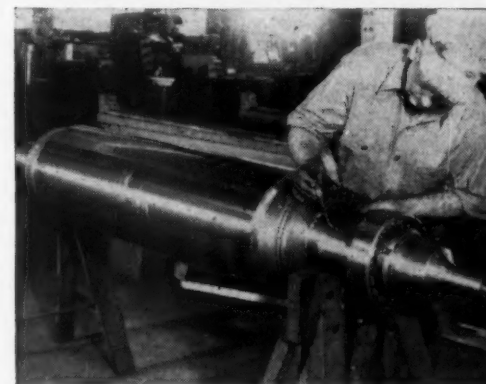
Centrifugally Cast Bronze Printing Press Rolls



Centrifugally Cast Rubber Refiner Bearings



Centrifugally Cast Aluminum Parts, Rough Machined



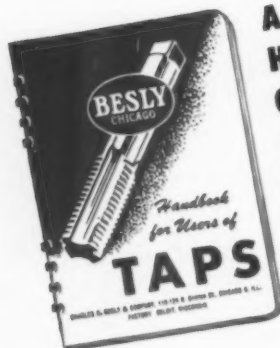
Centrifugally Cast Textile Machinery Roll



At
Massey-Harris
BESLY TAPS
HELP BUILD FAMOUS TRACTORS

Left: In multiple tapping of tractor frames, this automatic machine, equipped with Besly taps, threads 16 deep bottoming holes at one operation.

Right: Model "30" Massey-Harris two-plow tractors rolling from the big assembly line of this hundred-year old company at its Racine, Wis., factory.



**Ask for This
Helpful Book
Of TAP FACTS!**

It's full of valuable information on taps and tapping procedures—written by shop men for shop men. Drill sizes and tap fits are listed. Write today on your letterhead for a copy.

In production of the popular new post-war line of Massey-Harris tractors, Besly Taps prove their accuracy and stamina in tapping tough cast iron—one of the most severe tests of tap quality and endurance.

Thousands of other leading American manufacturers also depend on Besly Taps for close-fit, low-cost work . . . *many of them for more than 50 years.* Besly Taps meet exacting specifications—particularly for clean-cut, economical threading.

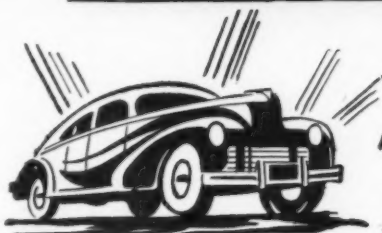
If you have a tap problem—remember, a Besly engineer is ready to help you find the answer.

BESLY

**BESLY TAPS • BESLY TITAN ABRASIVE WHEELS
BESLY GRINDERS AND ACCESSORIES**

CHAS. H. BESLY AND COMPANY, 118-124 N. Clinton St., Chicago 6, Ill., Factory: Beloit, Wis.

THERE'S A BRUSH IN THE LIFE OF EVERY BEAUTIFUL BODY



THE top and sides of today's sleek new automobile bodies have all the appearance of being made of a single piece of metal. In reality, they are separate pieces welded together for strength. With this welding operation, a metal cleaning problem is created. Every seam has a rough scale which must be removed completely.

Here is a typical auto production job where speed and perfection are demanded. And both are obtained by cleaning with a power driven Osborn Disc-Center wire wheel brush. Scale is removed in a jiffy and the surface prepared for a coating of solder to produce a smooth joint which, when painted, is invisible to the eye.

Removal of excess material, cleaning, finishing, roughing—Osborn brushes have won their spurs as time-saving, cost-cutting production tools on all these basic jobs. There's a type and size for every operation. And the man to show you how to apply these brushes for maximum benefits is the Osborn sales engineer. His experience is yours for the asking. Write or call today.

THE OSBORN MANUFACTURING COMPANY

5401 Hamilton Avenue

Cleveland, Ohio



WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY

HERE'S A GOOD WAY

to Reduce Tube Replacement ...

► To guard against the wasted time and labor that tube replacement costs, it pays to look for *more than analysis* when you select Stainless Tubing.

For example, special finishes to provide *extra protection* against corrosion or contamination can often be provided in Carpenter Stainless Tubing. *Uniform wall thickness* is another Carpenter Stainless Tubing advantage that will help you specify lighter gauges . . . and keep equipment on the job with fewer shut-downs for replacement and repair.

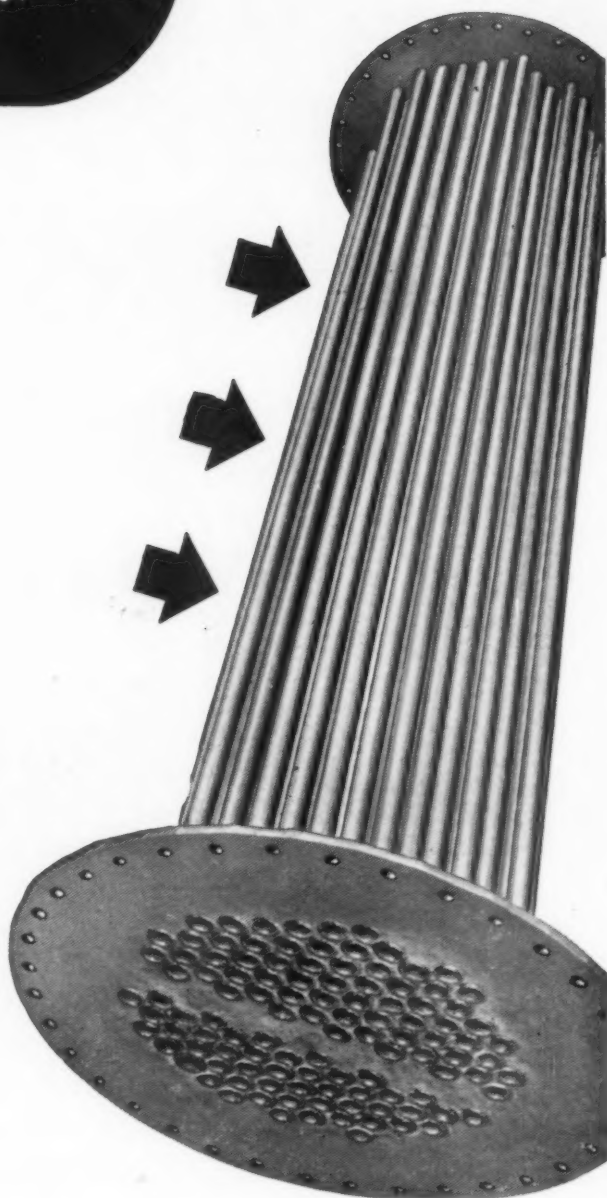
To make each of your Stainless Tubing dollars work harder and longer, drop us a line. Carpenter's 20-year experience with Stainless Pipe and Tubing problems is yours for the asking.

OVER 100 PAGES OF USEFUL INFORMATION ABOUT STAINLESS TUBING

To help you make full use of the properties of Stainless Tubing, fabricate it and improve processing, the new Carpenter Stainless Tubing Data Book is available to Engineering and Management executives. A note on your company letterhead will bring a copy to you.

THE CARPENTER STEEL COMPANY

Alloy Tube Division • 122 Springfield Road • Union, N.J.



Carpenter

STAINLESS TUBING

"MORE THAN CORROSION RESISTANCE"



NEW SUNVIS

"900"

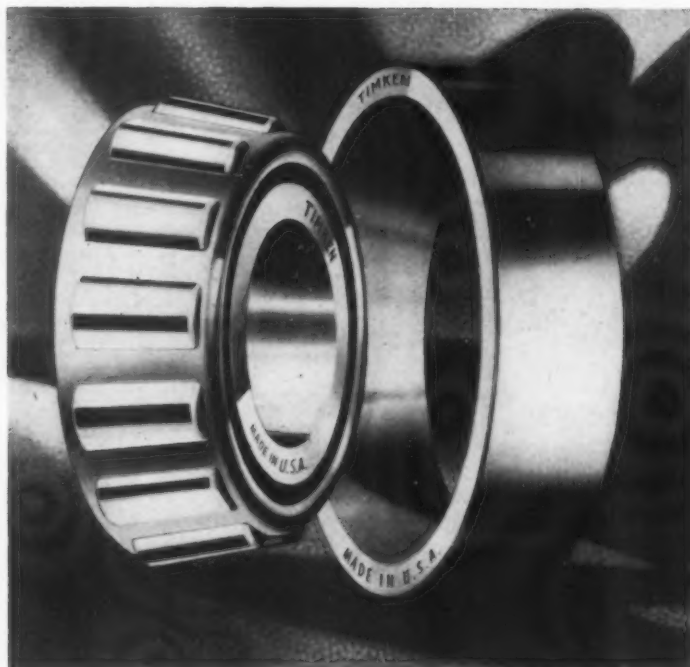
TURBINE OILS

The new SUNVIS "900" TURBINE OILS are a postwar development to meet the lubrication requirements of the most modern, high-speed, high-temperature, high-pressure turbines. The life characteristics of these oils are far in excess of present-day demands, and we predict performance equal, or superior, to that of any other turbine oils. We invite the inquiries of public utilities and other turbine operators.



SUN OIL COMPANY • Philadelphia 3, Pa.

WHEN BUYING BEARINGS,



LOOK FOR THE *Plus* VALUES

Buy the bearings that will make your good machines *better* machines and *better selling* machines. Buy Timken Tapered Roller Bearings and get these plus values: (1) 50 years of designing, manufacturing and applying tapered roller bearings exclusively. (2) Timken Alloy Steel developed especially for Timken Tapered Roller Bearings and produced in our own modern steel mill under a system of quality control that leaves nothing to chance.

(3) Manufacturing tolerances so close that they can only be measured by the world's finest scientific instruments. (4) World-wide acceptance and preference wherever wheels and shafts turn. Who can do as well?

To be sure of getting all these plus values, look for the trade-mark "TIMKEN" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio.



NOT JUST A BALL ○ NOT JUST A ROLLER □ THE TIMKEN TAPERED ROLLER □ BEARING TAKES RADIAL ○ AND THRUST → ○ ← LOADS OR ANY COMBINATION



WALWORTH LUBRICATED PLUG VALVES



offer these advantages

- ... Direct port opening
- ... Quarter turn opens or closes valve
- ... Dead tight shut-off
- ... Freedom from attack by fluids being handled
- ... Pressure sealed
- ... Made in a complete line. Sizes from $\frac{1}{2}$ " to 26" for pressures from 175 to 5,000 psi., and for vacuum requirements

THESE are just a few of the reasons why Walworth Lubricated Plug Valves give "top" performance on many difficult services.

All Walworth Lubricated Plug Valves employ special insoluble lubricants which protect the plug and body against contact with the line fluid, thus combatting erosion and corrosion.

The lapped surfaces of the valve are "pressure sealed" when the valve is in either the open or closed position. By turning the lubricant screw, lubricant is forced under high pressure through a grooving system that completely encircles the ports as well as the top and bottom of the plug.

The lubricant seals the valve against

leakage, and reduces friction between plug and body. This permits easy, quick, full-opening, or tight shut-off with only a quarter turn of the plug.

Number 1700 (illustrated) is a Steel-iron valve, wrench operated, designed for a working pressure of 200 pounds WOG (water, oil, or gas). Valves are available in either screwed or flange types. Screwed type have API line pipe thread lengths. Flanged type (No. 1700F) is faced and drilled to American Standard for 125-pound cast iron flanges unless otherwise specified.

For further information about No. 1700 as well as the complete line of Walworth Lubricated Plug Valves, write for catalog.

WALWORTH

valves and fittings

60 EAST 42nd STREET, NEW YORK 17, N. Y.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

SCOVILL

NON-FERROUS

FORGINGS

*When SCOVILL becomes your METAL PARTner
PRECISION FORGINGS LIKE THIS
CUT METAL AND MACHINING COSTS*



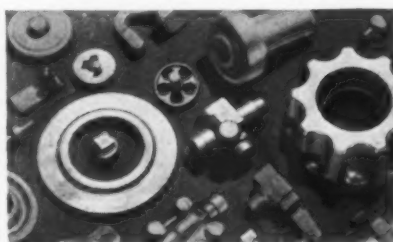
Here you see a 2-oz. brass lens mount. It was formerly produced from bar stock weighing 1600 lbs. of bar stock per thousand finished pieces. That meant more than 23.6 ounces of scrap per part.

Now it is machined from this Scovill forging weighing only 8 ounces... effecting a reduction in scrap of about a pound per piece. Add to that saving the time differential between machining solid rod and pre-formed forgings and you can see why our customer is so well satisfied with the change.

CHECK WITH SCOVILL

If you suspect that the design, quality or cost of your metal parts can be

improved, why not review the situation with Scovill. Our long experience in a wide variety of non-ferrous forgings, together with our extensive metal-working facilities, may bring you the answer you're looking for. To get all the details about the way you may profit from making us *your METAL PARTner*, fill in the coupon below and mail it today. Scovill Manufacturing Company, Waterbury 91, Conn. *Export Dept.*, 405 Lexington Avenue, New York 17, N. Y.



Please send me information about your metal-working facilities. I am interested in non-ferrous forgings for the applications checked:

- ☐ Aircraft
- ☐ Automobiles
- ☐ Band Instruments
- ☐ Blow Torches
- ☐ Cameras
- ☐ Communication Equipment
- ☐ Cylinder Valves

- ☐ Fire Extinguishers
- ☐ Household Appliances
- ☐ Industrial Instruments
- ☐ Plumbing Goods
- ☐ Pumps
- ☐ Valves
- ☐ Welding Equipment

Other applications.....

SCOVILL MANUFACTURING COMPANY

Forgings Division

21 Mill Street

Waterbury 91, Connecticut

Name

Company

Address



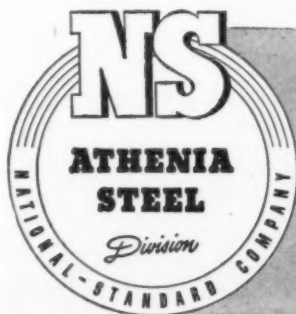
HAVE you found it a problem to obtain strip steel exactly suited to your particular fabrication and end-use requirements? In many instances, standard or volume-produced steels simply can't fill the bill.

At Athenia, we "make it our business" to solve such problems, to develop and process special steels that are *precisely* right . . . cold rolled, high-carbon steels, produced in *controllable* batches, in widths up to 6½ inches and from .0015 to .062 inches thick.

For almost 40 years Athenia customers have been receiving this personalized creative service—ever since skilled Swedish steelmakers founded this company to produce finer steels in America

than come from *anywhere* abroad. It has made many lasting friends for Athenia—prominent manufacturers who want only the finest, precisely controlled steels for their razor blades, watches, textile machinery, saws, surgical instruments, typewriters, piston rings and scores of other precision products.

If you can do *better than ever* with a fine, specially engineered steel . . . if you have a tough, *unsolved* problem in steel . . . or if you are only interested in having your established specifications followed religiously . . . in any case, we welcome the chance to acquaint *you* with service the *Athenia* way.



DIVISIONS OF NATIONAL-STANDARD COMPANY

ATHENIA STEEL

Clifton, N. J.

Flat, High Carbon, Cold Rolled Spring Steel

NATIONAL-STANDARD

Niles, Mich.

Tire Wire, Fabricated Braids and Tape

WORCESTER WIRE WORKS

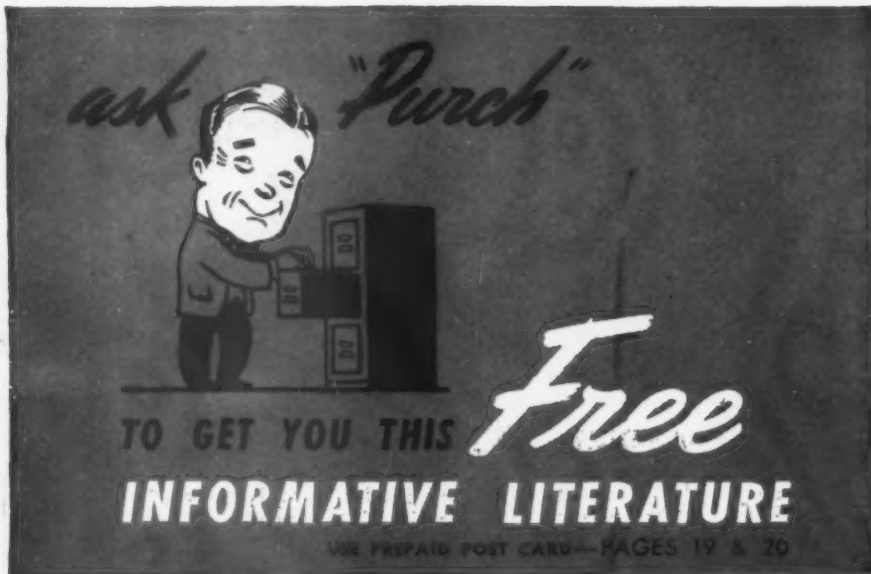
Worcester, Mass.

Round Steel Wire, Small Sizes

WAGNER LITHO MACHINERY

Jersey City, N. J.

Lithographing and Special Machinery



☐ **1. NEW LETTERHEAD PAPER**—Sample book shows Hammermill Cockletone Bond, a new letterhead paper featured by fine appearance, character, writability and erasability. Hammermill Paper Co.

☐ **2. DECAL ADVERTISING**—"Ads on Wheels" is title of manual on truck decal advertising in full color which shows interesting and varied uses of brand names, trademarks, product illustrations and other advertising messages on trucks. The Meyercoed Co.

☐ **3. GEAR BOX**—Circular describes the Piezo Mitre Gear Box, type MG, which supports and encloses a pair of steel right-angle drive gears with 1:1 ratio. Piezo Mfg. Corp.

☐ **4. COUNTING DEVICES**—Brand new Veeder-Root catalog G-47 covers that company's counting and computing devices in detail, 112 pages, profusely illustrated. New method of presenting information presents the advantages of ordering Standard Stock Counters when adaptable for specific uses. Each basic type of counter has been allotted a page. Application index aids in making selection. Veeder-Root Inc.

☐ **5. INDUSTRIAL GLOVES**—Circular illustrates the Perfect Glove Company's industrial gloves, which are described as being "really tough".

☐ **6. FASTENERS**—New catalog, 24 pages, details Lamson "special purpose" fasteners—lock nuts, pipe plugs, Dardelet rivet-bolts, wood bolts, clips, cotter pins, set screws, Sems lockwasher screws, sheet metal screws, bolts and roes, furniture bolts, dowel pins, etc., etc. The Lamson & Sessions Co.

☐ **7. EXHAUST HOSE**—Flexaust spiral-wire-reinforced hose, 3" to 24" dia., for maximum flow of air, gases, dust etc., un-

der pressure or suction; Portovent wire ring reinforced hose, 5" to 24", and Bloflex, non-reinforced, 8" to 18", are the subject of new catalog just released by American Ventilating Hose Co.

☐ **8. FLAME HARDENER**—Bulletin describes the Denver Flame Hardener. Maker states that positive control makes possible application of the flame hardening process to unlimited fields. Photos and line drawings show applications. The Stearns-Roger Mfg. Co.

☐ **9. OIL SEALS**—Syntech, new oil seal designed around a precision-molded, synthetic rubber sealing member, which is said to provide longer life, zero leakage and a marked reduction in power-loss due to oil seal drag, is the subject of catalog issued by National Motor Bearing Co. Seals are available in two types—spring loaded Syntech for shafts whose diameter is .875" and over, and the springless type for shafts under .875". Also, Catalog 101 gives listing of the company's leather oil seals.

☐ **10. LOOSE-LEAF BINDERS, COVERS**—Catalog covers the Federbush Company's binders—sectional post, slotlock and storage, sheet holders, memo books, price books, ring and prong binders, flexible folders, etc.

☐ **11. SAMPLE CASES**—Catalog 138 describes Fibre Products Manufacturing Company's salesman's sample cases. Line includes telescopes, suit cases, hat cases, hosiery, shirt, garment, jewelry, notion and novelty cases, stock boxes and trays, fitted sample cases, display sample cases, tray cases, etc., zipper cases and frame bags.

☐ **12. GRINDING CARBIDE TOOLS**—That is the name of new handbook on how to recondition and sharpen cemented carbide tools and cutters rapidly and economically, issued by the Norton Company. It was

prepared to assist in selection of proper grinding wheels and best methods for sharpening and reconditioning these tools.

☐ **13. RUBBER TRANSMISSION BELTS**—New 12-page catalog section on "Selection and Maintenance of Rubber Transmission Belts" has just been issued by the B. F. Goodrich Co. Discussing the problems facing the purchaser of a flat belting drive, it gives information as to type, grade, width, thickness and length, commonly used sizes, minimum pulley diameters, etc.

☐ **14. CARBON Papers, INKED Ribbons**—"Timer Saver Catalog" on carbon papers and inked ribbons has been issued by Carter's Ink Co. It details brands, styles, and colors, inkings, odd sizes, etc.

☐ **15. VALVES, FITTINGS**—Stainless Steel Valves and Fittings are the subject of Alloy Steel Products Company's new 56-page catalog No. 47.

☐ **16. NEW ORLEANS MANUFACTURERS**—Classified Buyers' Guide of the New Orleans market is available from the New Orleans Association of Commerce.

☐ **17. RUST PREVENTIVE**—Oakite Special Protective Oil which is said to be a highly effective rust preventive for protecting parts and surfaces between and after manufacturing operations, and which may be used after cleaning and rinsing to remove moisture, and for preventing rust on parts in storage is subject of new bulletin issued by Oakite Products Inc.

☐ **18. RESISTORS**—Catalog 100E covers Sprague Koolohm resistors. Detailed information is presented on various types which are illustrated. The Sprague Electric Co.

☐ **19. DEAERATORS**—Cochrane deaerators for conditioning boiler feed water to prevent corrosion, and which are guaranteed to provide complete deaeration, are the subject of bulletin 3005. Cochrane Corp.

☐ **20. PLATING FILTERS**—Alsop "Sealed Disc" filters for plating solutions are the subject of new catalog "Filtration of Electroplating Solutions" issued by Alsop Engineering Corp.

☐ **21. NUMBERING MACHINES**—Catalog No. 37 describes Roberts numbering machines for use in office or factory. Roberts Numbering Machine Co.

☐ **22. V-BELTS**—Booklet A-469 describes Dayton V-Belts with rayon cords which are said to make for minimum stretch, greater flex strength and longer V-Belt life. Dayton Rubber.

☐ **23. DIPPING BASKETS**—Printed matter describes Jelliff dipping baskets which are available in aluminum, brass, copper, monel, steel, stainless nickel and other metals and alloys. The C. O. Jelliff Mfg. Corp.

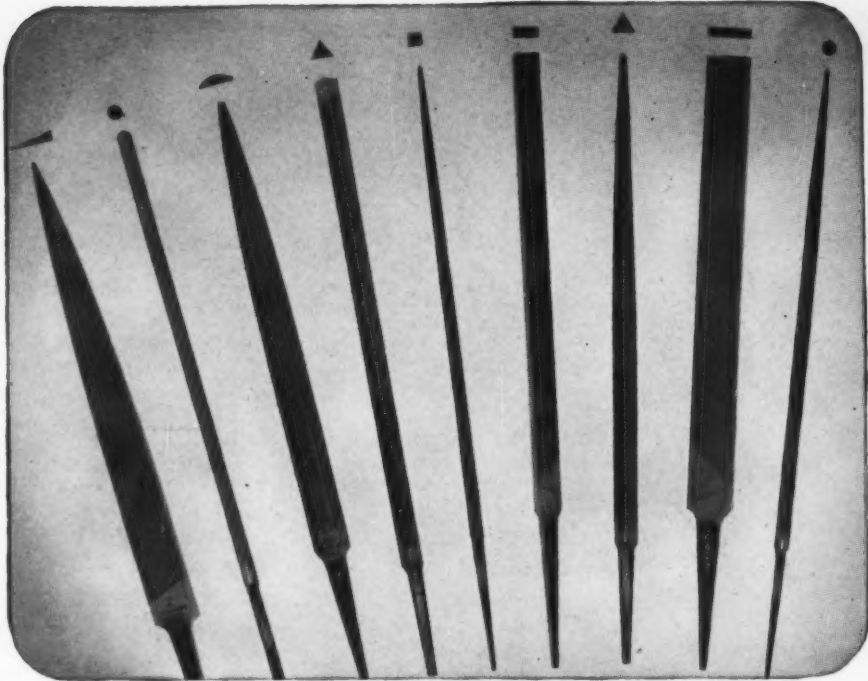
☐ **24. CHICAGO BUYERS GUIDE**—Buyers Guide and Industrial Directory of Chicago is available from the Chicago Association of Commerce and Industry, without cost. Buyers Guide Division.

☐ **25. POSTURE CHAIRS**—Seating for executive offices, clerical staff, stenograph-
(Please turn to page 16)


ASK "PURCH" FOR THIS FREE, UP-TO-DATE LITERATURE
Four Pages—14-16-19-20


Use convenient prepaid postcards on pages 19 & 20

POP'S SCHOOL OF FILING



Knife
Round
Straight
Half
Round
Metal
Saw
Square
Pillar
Narrow
Three
Square
Hand
Round





“X.F. means ‘EXTRA FINE’ in Swiss Pattern Files”

— says *Pop the Foreman*

Like most other shop foremen, Pop is a “stickler” for accuracy. That goes for the tools his men use as well as for the work they turn out.

Precision filing calls for precision files — X.F.

Swiss Pattern Files made by Nicholson. More exacting measurements . . . smaller points . . . longer tapers — these are features that distinguish Swiss Pattern Files from American Pattern. More careful design, accurate cut, and uniform hardness are characteristics which have made “X.F.” the largest selling file brand of its type.

Nicholson X.F. Swiss Pattern Files come in more than a hundred shapes — a multitude of sizes — with cuts ranging from No. 00, the coarsest, to No. 6, the finest. Sold through industrial distributors under the Nicholson guarantee of *Twelve perfect files in every dozen.*

NICHOLSON FILE CO. • 28 ACORN STREET • PROVIDENCE 1, RHODE ISLAND
(In Canada, Port Hope, Ont.)

NICHOLSON FILES

FOR EVERY PURPOSE



(Continued from page 14)

ers, and factory workers is described in printed matter available from the Domore Chair Co., Inc.

26. HEAT TREATING—Alloy heat treatment check chart which lists heat treat procedures for 60 popular steels, gives temperatures for hardening, annealing, normalizing, and carburizing, and also covers cooling media and tempering ranges, is available from Peter A. Frasse & Co. Inc.

27. TAPS—Catalog describes the Hy-Pro ground thread tap. Maker states that when tapping at high speeds it will usually produce at least 6 times as many threaded holes as a cut thread tap, with less power, less sharpening and less breakage. Hy-Pro Tool Co.

28. FLEXIBLE SHAFT MACHINES—Strand portable Flexible Shaft machines for grinding, buffing, polishing, sanding, drilling, reaming, filing, etc., are detailed in catalog. Vertical and horizontal models from 1/2 to 3 hp. N. A. Strand & Co.

29. ADHESIVES—CAN LABELING—Bulletin issued by Paisley Products Inc., describes can labeling adhesives.

30. ALUMINUM CASTING ALLOYS—Booklet available from Federated Metals Divn., American Smelting & Refining Co. describes aluminum casting alloys.

31. BEARING BRONZE—Catalog of 76 pages describes "everything you need in bearing bronze"—350 sizes of bars, 850 sizes stock size bronze bearings, 250 electric motor bearings, etc. Johnson Bronze.

32. CARTON STITCHERS—Acme Silverstitchers for stitching shipping cartons which are claimed to pave the way for lower carton closure costs, are described in booklet available from the Acme Steel Co.

33. SPEED NUTS—Box of free samples in 10 sizes of Speed Nuts will be sent to you by Tinnerman Products Inc.

34. PUMPS—Amsco-Nagle Industrial Pumps are the subject of bulletin issued by American Manganese Steel Divn., American Brake Shoe Co. Pumps are said to be featured by exceptional service and ease of maintenance.

35. TUBING—Twenty-page bulletin describes Rockrite close tolerance tubing,

which is available in many types and metals. Dimensional accuracy of tubing is said to pave way for definite economies in the production of cylindrical and ring-shaped parts. Tube Reducing Corporation.

36. FENCING—Anchor Chain Link Fence is described in Booklet No. 110 which shows types of fence, construction details, and photos of industrial installations. Anchor Post Fence Divn., Anchor Post Products Inc.

37. BUSHINGS, BEARINGS—Catalog describes Formetal superformed bushings and bearings in bronze, steel, or special alloy. Thin walls provide high strength, and along with other features produce savings in materials and operating costs. National Formetal Co., Inc.

38. FLAME CUTTING—Catalog describes the Oxxweld C-32 blow pipe. By selecting from choice of 57 nozzles operator can do almost any metal cutting job practicable with manual equipment. The C-32 operates on medium-pressure (5-15 lb. psi) acetylene. The Linde Air Products Co.

39. WIREBOUND SHIPPERS—"Your Product—How to Ship it Safely and at Lower Cost" is subject of informative book issued by the Wirebound Box Manufacturers Assn.

40. FUSETRONS—Printed matter describes the Fusetron, a fuse to which is added a thermal cutout, which carries Underwriters' Laboratory approval. Fuse-trons fit all standard fuse holders and are obtainable in all sizes from 1/10 to 600 amps. in both 250 and 600 volt types. They hold harmless overloads and prevent needless shutdowns, keeping electrical equipment in operation without sacrificing protection. Bussman Mfg. Co.

41. GRAY IRON CASTINGS—Booklet "A Quick Picture of the Eaton Permanent Mold Process for Producing Gray Iron Castings" tells about Eaton castings which are said to offer the advantage of uniform structure, freedom from growth, ability to take high surface finish, and free machinability. Eaton Mfg. Co., Foundry Divn.

42. PACKINGS—"Johns-Manville Packings for the Product Designer" describes seal rings, clipper seals, moulded packings, die formed rings, rod packing with accordion folded center block that acts as lubricant reservoir, flexible metallic packing, square braided packing, gaskets, tapes, and other packings. Johns-Manville.

43. PORTABLE ELECTRIC TOOLS—Catalog describes the Black & Decker Manufacturing Company's line of sanders, grinders, drills, saws, and many other portable electric tools for production, maintenance, repair and construction.

44. COLD-HEADED SPECIALTIES—Catalog describes cold headed Hassall cold heading specialties—nails, rivets, threaded parts, etc. Rivets 3/32" diameter and smaller are a Hassall specialty. Variety of metals and finishes available. John Hassall Inc.

45. SHELVING—Printed matter describes Hines-Shelves for warehouse, stockroom, store and display uses. They are engineered to carry almost any load which can be placed on the shelves. These prefabricated shelves are readily assembled by unskilled labor. Frame is Ponderosa pine; shelf surface is made of Masonite tempered presdwood. Edward Hines Lumber Co.

46. CUT GEARS—Catalog No. 1000, 575 pages, describes James gear speed reducers and cut gears, and contains practical information that will assist in solving gear and gear transmission problems. Buyers and engineering departments will find it of great value. D. O. James Manufacturing Co.

47. WASHERS, GASKETS, Etc.—Folio contains 53 sample materials for washers, gaskets, die cuts, packings, etc. made of asbestos, neoprene, cork, rubber and other materials. Ind. Gaskets & Packing Divn., Felt Products Mfg. Co.

48. WIRE FORMS—Catalog describes the wire form products of The Reliable Spring & Wire Forms Co.—clips, hooks, bends, light stampings, round and flat wire springs, etc.

49. PLIERS, NIPPERS, Etc.—Catalog covers Bernard line of pliers, nippers, snips, cutters, punches, etc. Wm. Schollhorn Co.

50. ELECTROPLATING—Four Bulletins, 1015-A, ZF1, LTF-1, and CF-1 describe metal fluoroborate solutions which are claimed to be outstanding electroplating chemicals for a host of applications, particularly lead, tin, lead-tin alloy, copper and zinc plating. General Chemical Co.

51. GREASE ABSORBENT—Free sample of Quik-sil oil and grease absorbent, for use on oily greasy floors, will be sent to you by Trojan Products Department, The Diversey Corp. It is said to dry oil and grease with speed and to make floor safer.

52. DRILLS, REAMERS—New Celfor catalog covers high speed twist drills, reamers, and carbide cutting inserts and carbide tipped reamers. Celfor Tools, Division of Clark Equipment Co.

53. PLASTICS—Get a copy of "The Case of Material X", 12-page booklet describing Fiberglas materials used for plastics reinforcement, for your information and plastics file. Photographs show end-use of Fiberglass reinforced plastic products such as automotive body and aircraft parts, luggage, trays, lamp shades, small boats, electronic molds, etc. Owens-Corning Fiberglass Corp.

(Please turn to page 19)

ASK "PURCH" FOR THIS FREE, UP-TO-DATE LITERATURE
Four Pages—14-16-19-20

Use convenient prepaid postcards on pages 19 & 20

**When
Transmission Belting
Specifications are too
tough to figure out**



Your Thermoid Distributor Will Know!

He has the formula right on his desk in the big catalog of Thermoid products. By just a few simple steps, based on the specifications of the machine to be serviced, the guess work is taken out of the task of ordering the right transmission belting for any application.

He can tell you how it's built—

In case you should be interested in the weight of the duck and the composition of the live skim between plies. Users of transmission belting take long wear construction for granted when belting carries the Thermoid trade mark.

He knows something about Thermoid too—

Thermoid concentrates its manufacturing for industry on the well integrated line shown below. The Company itself, is large enough for precise, low cost, high quality production, but small enough to be quickly responsive to customers' specific problems. That's one of the reasons why—

It's Good Business To Do Business With Thermoid!

A postcard or a letter to the home office will bring his name and address to you.

Manufacturers of new equipment are invited to correspond direct with the home office.

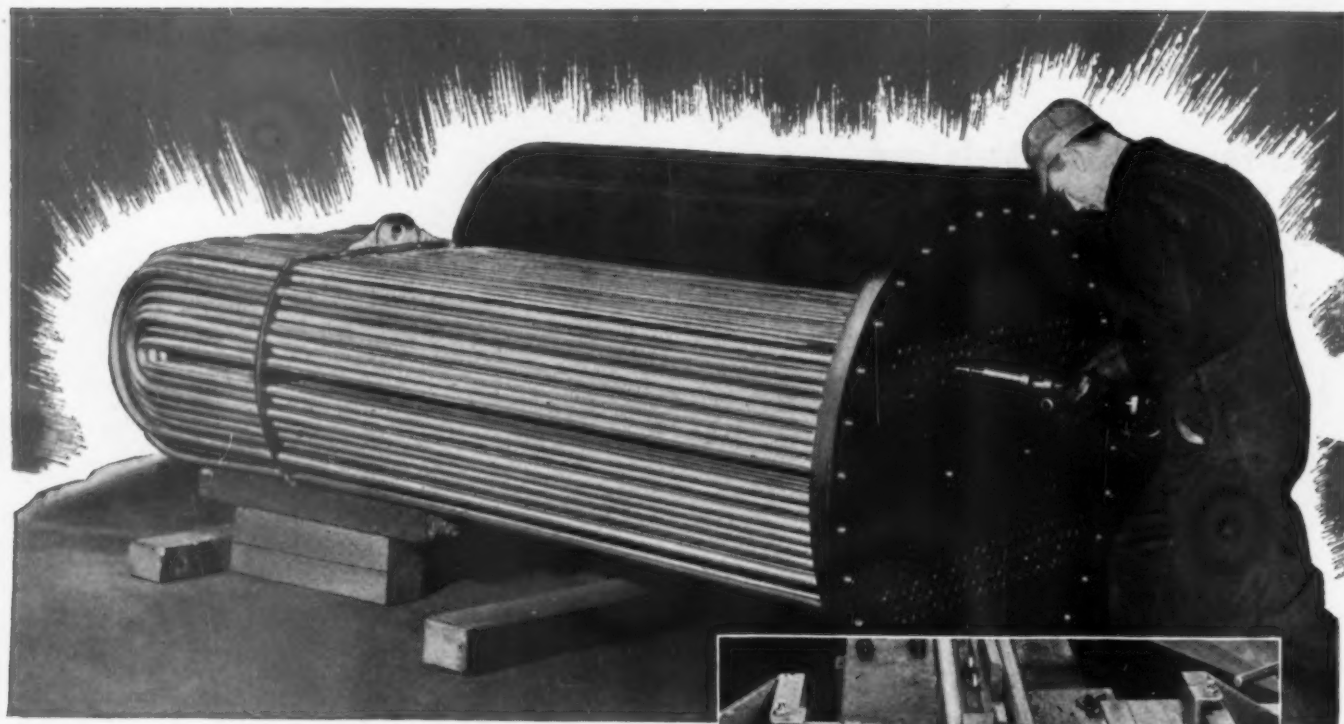


**Thermoid
Products**

Automotive • Industrial
Oil Field • Textile

Thermoid Company, Trenton, N. J., U. S. A.

The Thermoid Line Includes:
Industrial Brake Linings and
Friction Products • Transmission
Belting • F.H.P. and Multiple
V-Belts and Drives • Conveyor
Belting • Elevator Belting •
Wrapped and Molded Hose.



***they bend
this stainless tube
with flowers***

Note the unusually tight return bends in this heating coil unit. The tubes are tough, corrosion resistant stainless steel, yet the inside bend is only $1\frac{1}{2}$ " mean radius—on a $1\frac{1}{4}$ " O.D. x 16 ga. tube!

It wasn't done without difficulty. The tube is bent on an automatic machine with ball-type mandrel. Trouble was, the ball, after only a few bends, picked up a heavy burr. Then, on a tight return, the tubes would invariably chatter, sometimes break. Worse yet, constant redressing of the ball reduced its size—on larger bends, the extra clearance made tubes wrinkle.

Production was at a standstill, until a Frasse engineer noticed that the mandrel lubricant was being forced out by the extreme pressure. From a nearby drugstore, he took "flowers" of sulphur, mixed it with

auto grease in proportion, and thinned the mixture* down with machine oil to the consistency of soft butter. This was rubbed well into the mandrel surface, then applied as a heavy coating. Tubes were bent to all radii without further trouble.

Frasse, with its wide range of shapes, grades and sizes, is an excellent source for your stainless steel. More than that, Frasse knows how to help you in stainless applications. Call us. *Peter A. Frasse and Co., Inc.*, 17 Grand Street, New York 13, N. Y. (Walker 5-2200) • 3911 Wissabickon Avenue, Philadelphia 29, Pa. (Radcliff 5-7100) • 50 Exchange Street, Buffalo 3, N. Y. (Washington 2000) • 157 Richmond Avenue, Syracuse 4, N. Y. (Syracuse 6-2103) Jersey City • Hartford • Rochester • Baltimore

FRASSE

*for Stainless Steels
and Tubing*

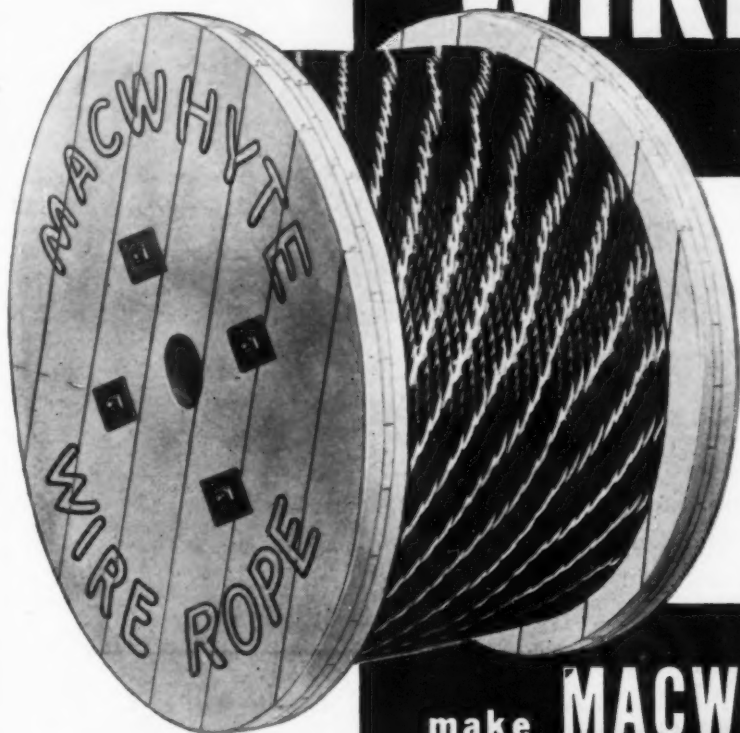
*Details for mixing this lubricant furnished on request. Write us.

bars
sheets
plates
strip
angles
tube
pipe
fittings
wire

When you use the correct wire rope, both the rope and your equipment last longer, cost less to operate. Macwhyte consulting engineers will check your equipment and recommend the wire rope specifically engineered for your job. Ask your Macwhyte distributor, or write Macwhyte Company.

*a thousand
and one*

MACWHYTE WIRE ROPES



*... all job-proved ...
assure you the correct
rope for your equipment*

MACWHYTE PREFORMED
AND NON-PREFORMED
INTERNALLY LUBRICATED
WIRE ROPES... MONARCH
WHYTE STRAND Wire Rope
... Special Traction Elevator Rope
... Stainless Steel Wire Rope
... Monel Metal Wire Rope...
Galvanized Wire Rope... Atlas
Braided Wire Rope Slings,
Hi-Fatigue Aircraft Cables,
Assemblies and Tie-Rods.
Catalogs on request.

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for **WIRE ROPE** and **SLINGS**

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Distributors throughout the U.S.A. and other countries

NO. 918



DO HARD JOBS
THE EASIER WAY...

with *Thor*

HEAVY-DUTY DRILLS

THOR HEAVY DUTY 1/2" ELECTRIC DRILL—the original, close-coupled, smaller, lighter half-inch electric drill. No other electric drill of similar size offers such compact power and light weight convenience and high efficiency for continuous service on hard production and maintenance jobs. There's a full range of Thor sizes—a tool for every need—all compactly designed, well-balanced and ruggedly built. For full information ask your nearby Thor Distributor or write for catalog.

INDEPENDENT PNEUMATIC TOOL COMPANY

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Thor PORTABLE POWER
TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

POWER TRANSMISSION MACHINERY *by* **LINK-BELT** *Serves All Industry*



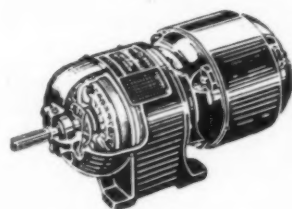
Silverlink
Roller Chains
and Sprockets

Silverstreak
Silent Chain
Drives

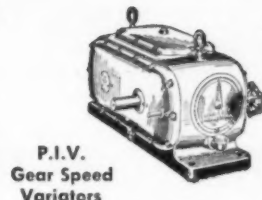


Steel, Malleable
and
Promal Chain Drives

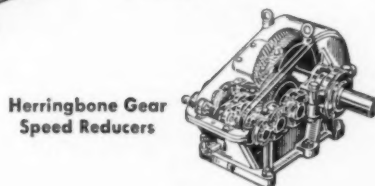
V-Belt Drives



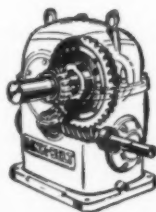
Electrofluid
Drives



P.I.V.
Gear Speed
Variators



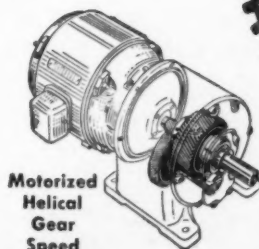
Herringbone Gear
Speed Reducers



Worm Gear
Speed Reducers



Babbitted Bearings
— all types



Motorized
Helical
Gear
Speed
Reducers

LINK-BELT **BALL AND ROLLER** **BEARINGS**



ASSURE SERVICE SATISFACTION

Engineering principles and manufacturing methods of Link-Belt Ball and Roller Bearings are all pointed to the one objective: the assurance of "service satisfaction" to the user. They have many outstanding features which are making major contributions to that objective. Link-Belt bearings can be furnished in pillow blocks, cartridge, flanged, take-ups, hanger and duplex units or without mountings for machine applications, etc.

LINK-BELT COMPANY

THE LEADING MANUFACTURER OF CONVEYING AND MECHANICAL POWER TRANSMISSION MACHINERY
Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1,
Minneapolis 5, San Francisco 24, Los Angeles 33,
Seattle 4, Toronto 8. Offices, Factory Branch
Stores and Distributors in Principal Cities. 10,819-A



LINK-BELT

Power Transmission Machinery

ON 1,220,000



Keeps its bearings in a "dust bowl"

Ordinarily, we wouldn't recommend that you use an open motor on a job like this. This Tri-Clad motor drives a boiler-feed pump in the National Gypsum Company plant at Clarence Center, N. Y. The air surrounding the motor is constantly filled with gypsum dust which must be kept out of the bearings. And it *has* been kept out of the bearings of this Tri-Clad motor, thanks to its specially designed bearing housing and seals. We believe that the Tri-Clad motor you see here proves that even where dust, moisture, or some other hazard is extremely severe for open-motor applications, the extra protection afforded by Tri-Clad motor construction results in longer motor life and lower upkeep.

and now—THE TOUGHEST **TRI/CLAD YET**

Newest addition to the Tri-Clad motor family is the Tri-Clad totally enclosed, fan-cooled motor. It is designed for use in adverse atmospheres—in iron dust, out-of-doors, in hazardous areas, and chemical atmospheres. Available in both standard and explosion-proof types, this Tri-Clad motor gives you these important construction features:

- A cast-iron, double-wall frame which completely encloses and protects the windings and punchings.
- A nonshrinking compound around motor leads which protects motor interior from dust and moisture.
- A rotating labyrinth seal which further protects the motor interior from damage by foreign matter.

MOTORS

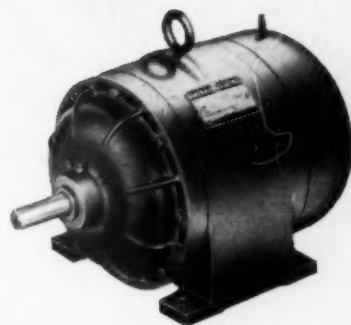


TRI CLAD

THE SYMBOL OF EXTRA PROTECTION

Announcement of the Tri-Clad motor, back in 1940, ushered in a new concept of general-purpose motor design. Substantially increased horsepower-per-frame-size, was one feature. Smarter appearance was another. But what really sold more than a million Tri-Clad motors is the *extra protection* we built into them.

Often operating under conditions no general-purpose motor should be asked to meet, Tri-Clad motors built up an enviable record of war-time service. Today, with the "family" including dripproof motors, vertical motors, gear-motors, capacitor-motors, and totally enclosed motors, the Tri-Clad motor is, more than ever, the motor that means basic protection, dependable performance, and minimum upkeep. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*



EXTRA PROTECTION... AGAINST PHYSICAL DAMAGE!

Rigid cast-iron frame and end shields protect vital motor parts from external abuse and prevent resonance. Because they're not at the mercy of a coat of paint, they strongly resist chemical attack and dampness. Cast iron also gives you tight, *metal-to-metal* fits between end shields and frame.

EXTRA PROTECTION... AGAINST ELECTRICAL BREAKDOWN!

Motor windings of Formex* wire, together with improved insulating materials, reduce the chances of electrical failure. Heat is dissipated quickly — motor stays young for years and years!

EXTRA PROTECTION... AGAINST OPERATING WEAR AND TEAR!

Bearing design affords longer life, greater capacity, improved lubrication features. Bearing seals retain lubricant, keep out dirt. One-piece, cast-aluminum rotor is practically indestructible.

*Trade-mark reg. U. S. Pat. Off.

GENERAL  ELECTRIC

750-235



TRI CLAD
REG. U.S. PAT. OFF.
MOTORS

- OPEN (DRIPPROOF)
- TOTALLY ENCLOSED
- EXPLOSION-PROOF

How To Strike A "Hard" Bargain!



No doubt our friend here is out to get more for her money . . . most of us are that way. And when it comes to a floor treatment, the one that lasts the longest . . . the one providing the hardest finish . . . is naturally the biggest bargain in the long run.

That's the reason so many maintenance men are turning to non-slippery Car-Na-Lac and Continental "18". These high quality floor treatments, built to wear longer, provide an extra hard, non-tacky finish that resists grinding-in of dirt and grime . . . floors stay clean up

to 30% longer. Tracking-off is reduced to a minimum, also. When correctly applied, Car-Na-Lac and Continental "18" adhere as though "welded" to the floor . . . thus longer wearing with savings resulting from fewer applications.

Why get "stuck" with inferior floor treatments? Try Car-Na-Lac or Continental "18" . . . you'll be striking a "hard" bargain, too!

CONTINENTAL CAR-NA-VAR CORP.

1653 E. National Avenue, Brazil, Indiana

Specialists in Heavy Duty Floor Treatments



CAR-NA-LAC
TRADE MARK REG. U.S. PAT. OFF.
LACQUER-LIKE FLOOR FINISH

Both Car-Na-Lac and Continental "18" are approved by the Rubber Manufacturers Association for rubber floors.

CONTINENTAL "18"
TRADE MARK REG. U.S. PAT. OFF.
THE SUPER FLOOR FINISH

Acts like a lacquer made of wax. Applied with the usual wax applicator. Levels out as it dries, resulting in a uniform, streakless, lacquer-like gloss. Self-polishing . . . dries in 15 to 20 minutes. Car-Na-Lac floor treatment has at least twice the wearing qualities of ordinary water waxes and is waterproof, non-slippery. Adapted for all floors except unsealed "raw" wood. Meets Proposed Federal Specifications for Item 9, Type I.

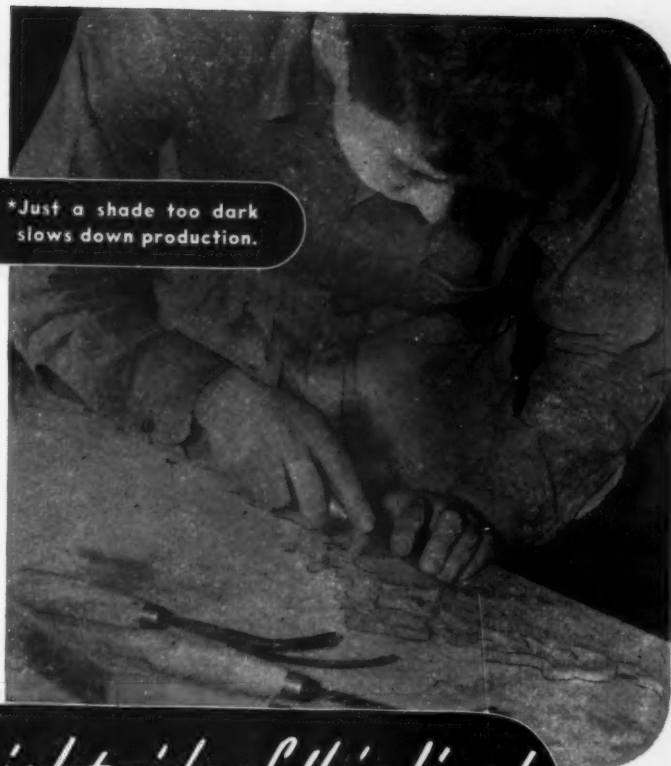
The same as Car-Na-Lac except that it contains about 38% more solids. Heavier solid content gives a higher gloss and reduces number of applications. Covering capacity averages the same as Car-Na-Lac, but one coat does the work of two. Recommended by a leading national casualty insurance company for safety. Meets U. S. Treasury Specifications for "Finish Material" (and Proposed Federal Specifications for Item 9, Type II).

Borderline Vision* may be robbing you!

● **BORDERLINE VISION** — lighting just a shade too dim — can steal your profits without your seeing it. But — just the hairline of difference between good lighting and not quite good enough makes a difference that shows in red and black in your ledger.

You can make sure your light is right easily today with Wheeler Skilled Lighting. Result of 66 years experience, Wheeler Reflectors give maximum illumination from standard lamps. More important, Wheeler Reflectors *control* light — provide an even, glare-free, shadow-free distribution on the work. Hundreds of manufac-

*Just a shade too dark slows down production.



Put your plant on the right side of this line!

turers have found that Skilled Lighting pays for itself many times over in fewer rejects, higher employee morale and increased production.

Make a light meter check in your plant now. If the results show Borderline Vision, see what a difference Wheeler Skilled Lighting will make in your profits. Write Wheeler Reflector Co., 275 Congress St., Boston 10, Mass. Also New York and principal cities.

Distributed Exclusively Through
Electrical Wholesalers



All-Steel Fluorescent Unit

For 2 or 3 40-watt, or 2 100-watt lamps. Available with open or closed end porcelain enameled reflectors. Broad wiring channel with accessible enclosed ballast. For individual or continuous runs.

RLM Solid Neck Incandescent Reflector



Maximum lighting efficiency indoors or out. Expertly designed, ruggedly built. Vitreous enamel only. 75 to 1500 watts.



Just right means more and better work.

Wheeler REFLECTORS

SKILLED LIGHTING

MADE BY SPECIALISTS IN LIGHTING EQUIPMENT SINCE 1881

THE LONG SERVICE
AND THAT'S WHY
YOU, TOO, WILL
LIKE THE FINE
PERFORMANCE
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GIBSON-SPRINGS

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The WILLIAM D. GIBSON CO., 1800 Clybourn Ave., Chicago 14

DIVISION OF ASSOCIATED SPRING CORPORATION



WHEN YOU NEED ONE STEEL BAR or a *truckload*



... you'll get immediate attention—and action—from your nearby Union Drawn Distributor. Every steel bar and shafting order—large or small—is important to him.

He has built his business on service—on speedy, dependable delivery of cold drawn steels from his well-filled racks. And, his entire organ-

ization is trained and equipped to follow through on both your normal and emergency requirements.

Whether you need one bar — a dozen — or a truckload—call your nearby Union Drawn Distributor **FIRST**. While you're at it, tip him off to future needs, too. That way, you can help him give you even better service.



Republic

UNION

REG. U. S. PAT. OFF.



COLD DRAWN STEELS



SCORED FIRST

... in these important tests!

**ACTUAL COMPARISONS PROVE
DH-2 CUTS ELECTRODE COSTS...
SPEEDS WELDING**

(Tests were made using the two fastest electrodes in this class — DH-2 and brand "B". One machine, set at 350 amps., was used for testing both. At lower heat, DH-2 also ranked first in each test.)

EFFICIENCY



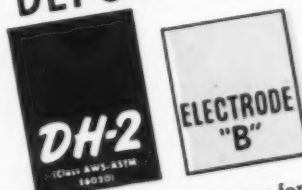
In recent tests, DH-2 performed at 69.2% efficiency as against 66.8% for the second best electrode!

SPATTER LOSS



DH-2 had a spatter loss of only 8.1% — its contender, 11.0%! This means more weld metal — less waste metal — less cleaning!

DEPOSITION



Most important factor for faster welding. DH-2 deposited over 15% more metal in lbs. per hour! 9.17% as against 7.97%.

BURN OFF

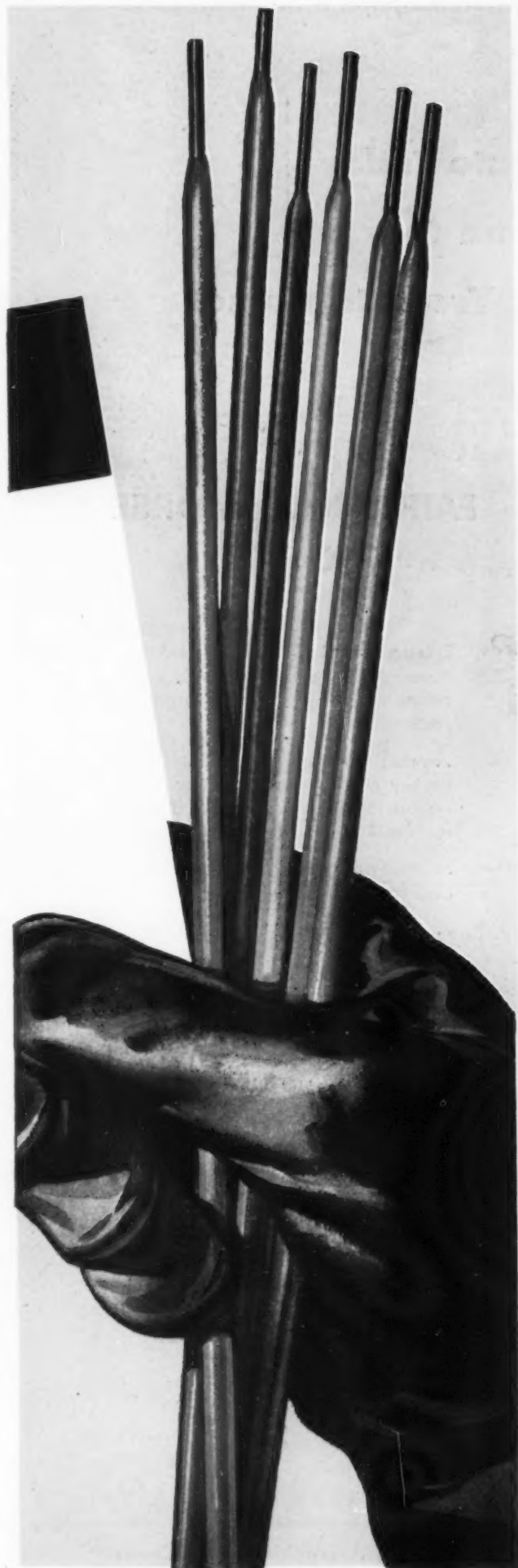


Here, DH-2 again placed first — DH-2 had a 10.5% greater burn-off rate — or 12.15 inches per minute as against 11.0%.

This stock test, made with stock electrodes—proves again that DH-2 is America's outstanding, outperforming electrode in this class. DH-2 is a genuine production electrode — so much faster, so much better — that it can cut your welding costs to the bone! It's a non-premium electrode doing premium work.

DH-2 can give you better appearing welds because weld metal "feathers out" — neat and uniform. And you can use this improved P&H Electrode on either AC or DC. Excelling at all down-hand work, DH-2 provides depth control — for medium or deep penetration.

Put DH-2 to your own Tests! Prove to yourself its savings — its faster production.



America's Most Complete Welding Service

A P&H ELECTRODE For Every Welding Requirement

You can benefit by P&H's long experience as a leading maker and user of arc welding equipment. There is help for your welding problems in this experience — and the broad line of P&H Electrodes, a few of which are listed here. See P&H for all your electrode needs. See your local P&H Distributor or write us.



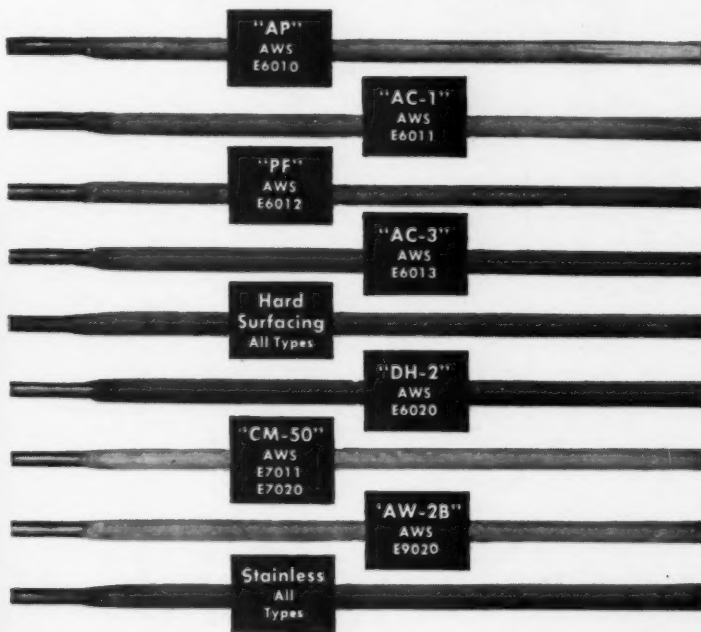
WELDING ELECTRODES

4577 West National Avenue
Milwaukee 14, Wisconsin

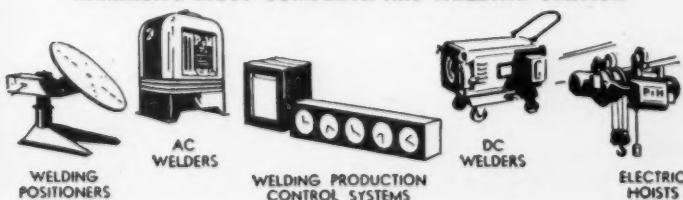
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CORPORATION

WELDING ELECTRODES • MOTORS • HOISTS • P&H • ELECTRIC CRANES • ARC WELDERS • EXCAVATORS

DC Welders • AC Welders • Welding Positioners
Welding Production Control Systems • Electric Hoists



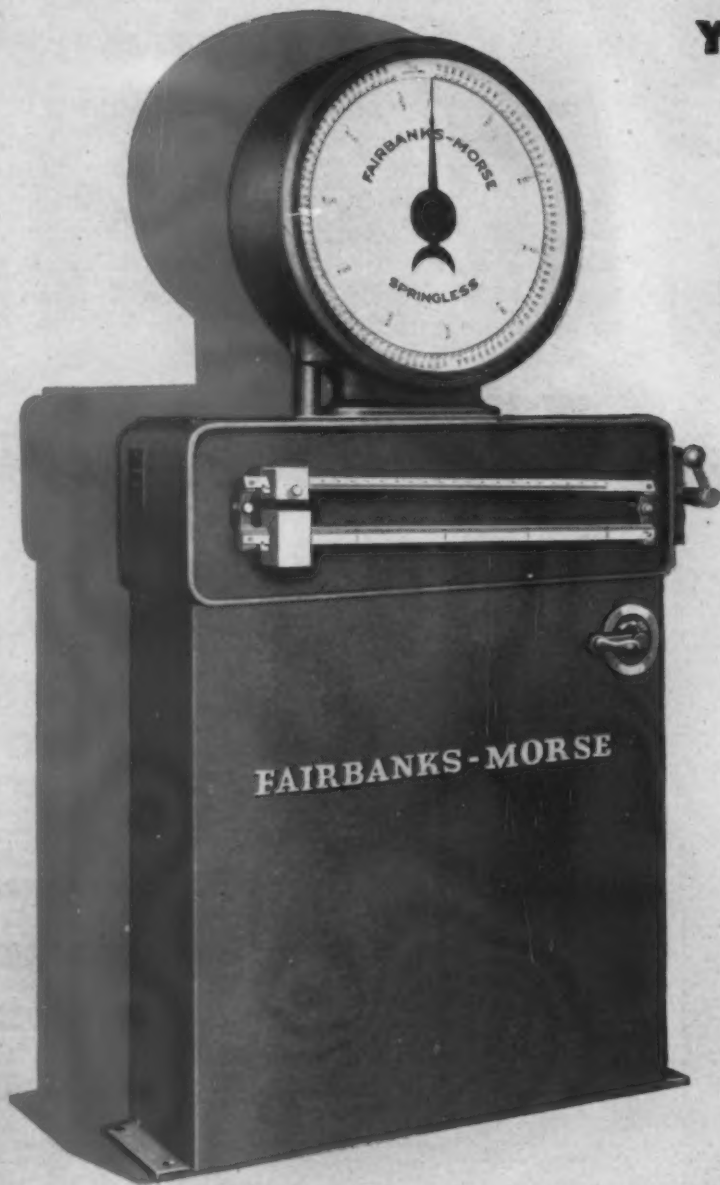
AMERICA'S MOST COMPLETE ARC WELDING SERVICE



**Accurate Today
and for
Years to Come**



FAIRBANKS-MORSE SCALES



It is not remarkable that Fairbanks-Morse Scales give enduringly accurate weighing service when you realize:

... that only materials of highest quality go into their manufacture—from their sturdy frames to their most minute working parts.

... that only skilled workmen are used to assemble them.

... that constant research is going on to make these scales even finer.

... that they have a heritage of 117 years of precision scale engineering.

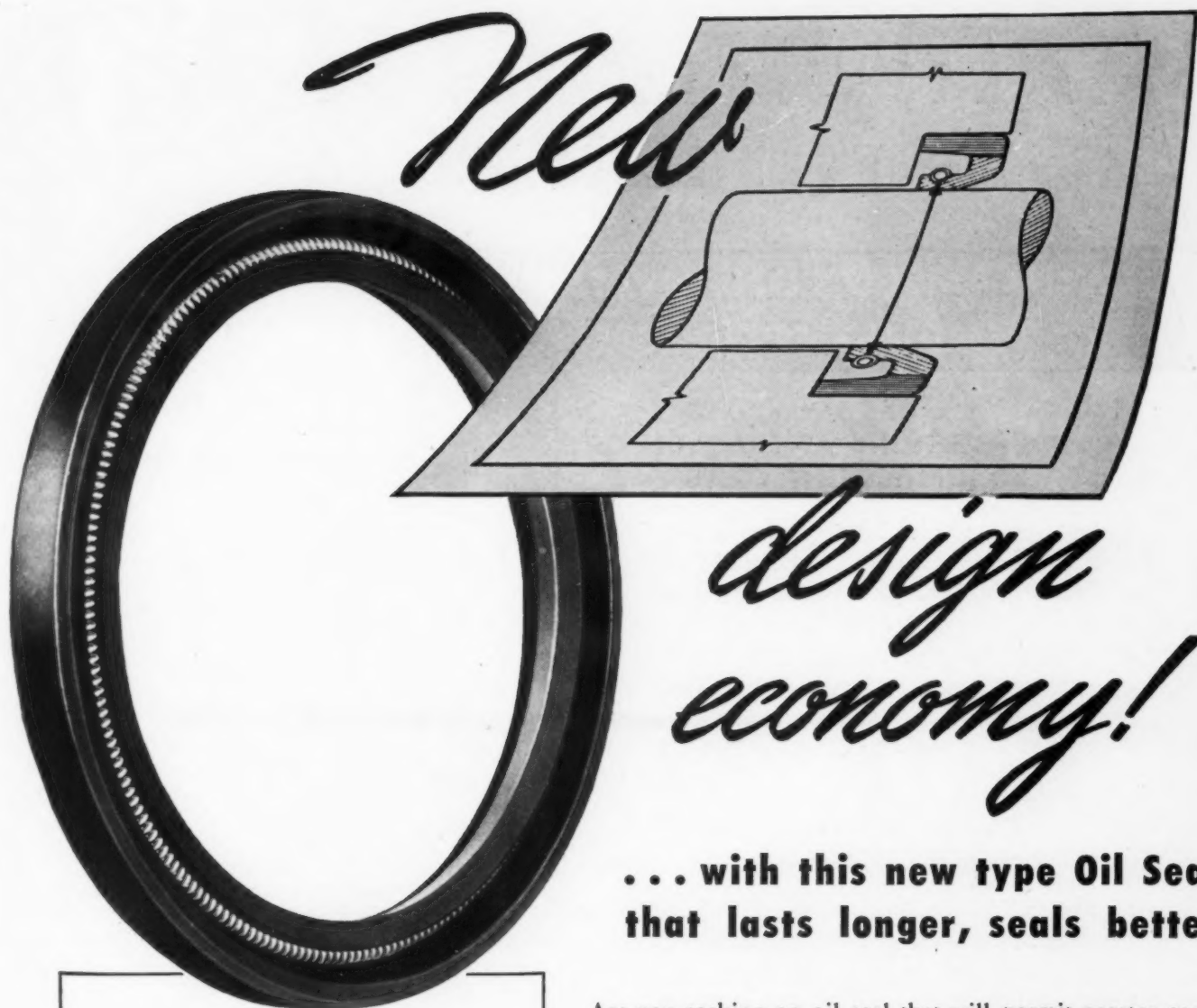
Fairbanks-Morse Scales will serve you with accuracy—today and for years to come. Fairbanks, Morse & Co., Chicago 5, Illinois.

Fairbanks-Morse

A name worth remembering



Diesel Locomotives
Diesel Engines
Generators • Motors
Pumps • Scales
Magnets • Stokers
Railroad Motor Cars
and Standpipes
Farm Equipment



**... with this new type Oil Seal
that lasts longer, seals better**



Clipper Seals were developed by Johns-Manville to protect vital bearings in our fighting planes during World War II. Their superior advantages as an oil seal were thoroughly tested and proved. Now they are available to the entire industry to provide the same efficient, long-term bearing protection.



Are you seeking an oil seal that will permit greater compactness and economy of design?

Clipper Seal may be the answer!

This new type Johns-Manville oil seal is available with a light flange section that permits designing oil seal cavities with depths as little as $\frac{1}{4}$ ". In fact, because of its unique 1-piece design, there is no cavity mechanically practicable which is too shallow—or too deep—for a Clipper Seal.

Consisting of a rigid heel and a tough but flexible lip moulded into a single unit, Clipper Seals provide an exceptionally long wearing oil seal with superior lubricant-retaining, dirt-excluding qualities. They are easily installed and may be removed without damage. Non-metallic, they are also resistant to most forms of corrosion.

Clipper Seals are made to fit any size shaft from $\frac{5}{8}$ " diameter to 68" O.D. For further information, write Johns-Manville, Box 290, New York 16, N. Y.

Johns - Manville

PACKINGS & GASKETS

BACK TO WORK PROGRAM FOR WORN PARTS

WITH AMSCO CONSERVATION WELDING PRODUCTS

RECLAIM PARTS AT FRACTION OF REPLACEMENT COSTS

\$14 saved . . . service life tripled — auger tip at right cost \$14 less to rebuild with Amsco Welding than to replace . . . gave over a year's service as compared to few months when new. You can't afford to scrap and replace worn parts, especially in an era of shortages, when Amsco Conservation Welding will deliver results like that. Put your worn parts back to work the Amsco way and save.

AMSCO LINE IS COMPLETE FOR ALL CONSERVATION WELDING

All Amsco Welding Products are devoted to saving for industry . . . to reducing maintenance costs wherever equipment parts are subject to impact and abrasion. Complete information will be sent on request.

Amsco Nickel-Manganese Steel, Mo-Mang, and Mang-Co Welding Rods for rebuilding worn manganese and carbon steel parts. Amsco No. 459, No. 217, Economy Hardface and Resistwear Welding Rods for hard-surfacing parts subject to impact and abrasion. Amsco Dieweld and Toolface for tool and die alteration and restoration. Amsco Nickel-Manganese Steel Filler Bars and Shapes where large amounts of metal are needed for rebuilding. Amsco Dipper Tooth Repointer Bars for restoring worn dipper teeth to original dimensions.



Cast Brick Machine Auger Tip built up with Amsco Nickel-Manganese Steel Rod, hard-surfaced with Amsco No. 459. Service life, new, few months — rebuilt: over a year.



Upset Forging Die shown (checked) above after producing 20,000 pieces. Below, same die restored with Amsco Dieweld and machined — produced 29,800 more pieces.

Only \$25 total cost has restored this driving sprocket for three consecutive times — each time gave service equal to new sprocket. Restoration made with Amsco Economy Hardface Electrodes.



Worn 1½"-wide scarifier teeth on this Buckeye road widener were hard-surfaced with Amsco Economy Hardface . . . gave 3 times service of original non-surfaced teeth.

AMERICAN

Brake Shoe

COMPANY

AMERICAN MANGANESE STEEL DIVISION

CHICAGO HEIGHTS, ILL.

Foundries at Chicago Heights, Ill., New Castle, Del., Denver, Colo., Oakland, Calif., Los Angeles, Calif., St. Louis, Mo.
Offices in principal cities. Made and sold in Canada by Canadian Ramapo Iron Works, Inc., Niagara Falls, Ont.

HANDS

of Skill

DEMAND THE BEST



DOUBLE-THUMB HUSKING GLOVES FOR DOUBLE WEAR . . . a typical Riegel "fit-the-job" work glove. And whatever the job . . . husking corn . . . puddling steel . . . sinking oil shafts . . . wherever skilled hands are at work . . . they deserve the best—for production efficiency as well as long-lasting protection.

WAGON BRAND Work Gloves are the product of one of America's largest textile mills. Each pair is designed for wear, and comfort. They are Riegel-controlled—in one plant—from raw cotton to finished gloves. That's the kind of close supervision of detail that means unbeatable quality, durability and economy.



Riegel WAGON BRAND • WORK GLOVES

Riegel Textile Corp. • 342 Madison Ave., New York 17, N. Y. • Atlanta • Chicago • Dallas

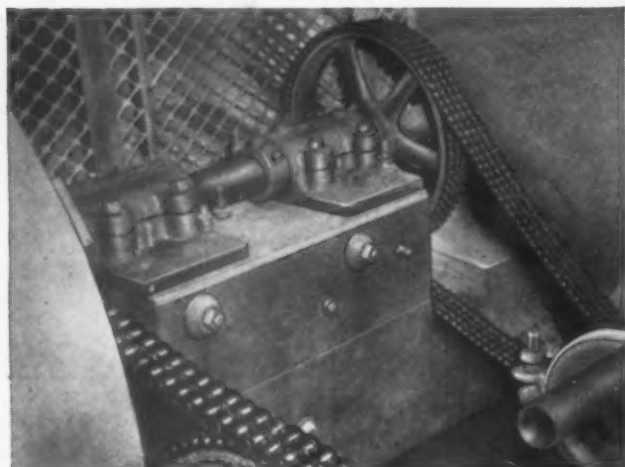
do you know Roller Chain...

is actually elastic!

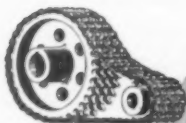


① AND HERE'S WHAT that means to you. Where your equipment is subjected to momentary overloads and sudden strains, the inherent elasticity of roller chain will help absorb those damaging shocks and protect your equipment.

② WE'VE ACTUALLY PROVED that roller chain is elastic. With this testing machine, designed and built by our engineers, we stretch this small section of Baldwin-Rex Roller Chain about $\frac{1}{8}$ -inch with each load application. We do this more than 10,000,000 times. Each time the chain must withstand the load and retract to its original length in order to meet our rigid specifications.



③ TAKE THIS CALENDER DRIVE The elasticity of that Baldwin-Rex Chain enabled it to withstand the severe shock loads as lumps of crude rubber are squeezed through the rolls. It's been in service more than 30,000 work hours and is still going strong. Previous drives gave only 6 months' service. That's real proof!



BALDWIN·REX
ROLLER CHAINS

You can simplify replacement, cut costs and help speed deliveries by specifying standard roller chain. Your Baldwin-Rex man will be glad to give you all the facts and help you with your application problems. Call him or write us direct.

BALDWIN-DUCKWORTH DIVISION OF CHAIN BELT COMPANY
366 Plainfield Street, Springfield 2, Massachusetts

ATKINS *"Curled Chip"* POWERSAWS

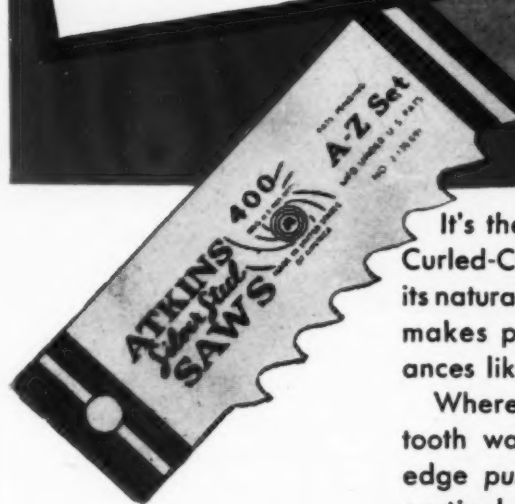
cutting time
CUT IN HALF

Read Results of Curled-Chip Tooth Action

An 18", No. 400 Atkins Curled-Chip Powersaw Blade made cuts through 6" nickel steel rods in 16½ minutes at 90 strokes, and 13 minutes in 130 strokes — half the time required by another make of blade — 30 minutes per cut at 90 strokes.

with
"LIFT-and-CURL"
Cutting Action

See what happens
when Curled-Chip
tooth hits tough
metal



It's the tooth-form of this Atkins Curled-Chip Powersaw Blade, with its natural "lift-and-curl" action, that makes possible cutting performances like that above.

Where the conventional angular tooth wastes power and dulls its edge pushing the chip against a vertical face, the inward-curved cutting face on the Atkins Curled-Chip Tooth *lifts* the chip with a smooth continuous curling motion. The chip, following its natural form

as it generates, explodes from the gullet like a suddenly released clock-spring.

Heavier feeds per tooth can be employed — there's less danger of tooth breakage from clogged gullets. The blades cut cleaner, truer — less re-machining is needed. And the famous Atkins "Silver Steel" assures long life to the blade. Speed your production... cut your downtime... save your dollars... with Atkins Curled-Chip Powersaw Blades.

See your industrial distributor first.

E. C. ATKINS AND COMPANY

Home Office and Factory: 402 S. Illinois Street, Indianapolis 9, Indiana

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ATKINS

ATKINS BLADES TAKE THE **"HACK"** OUT OF HACKSAWING

To All Users of
ATKINS Blades
Atkins "Silver Steel" Hacksaw
Blades will perform with complete satisfaction, when used with any tensioning device now being marketed.



THE
Magic
OF PACKAGED POWER

Wherever you go . . . wherever you look . . . you see the magic results of packaged power. You see it in the sky above you . . . on land and sea. You will find it below the surface of the sea and deep underground. For packaged power is Exide Battery power, a willing and trustworthy servant employed at countless tasks to make life safer, easier and more profitable for you.

There are Exide Batteries for every

storage battery need. They supply safe and dependable power for time-and-cost-saving battery electric trucks and mine haulage units. They are used by telephone and telegraph companies and radio stations. On railroads, airplanes and marine craft

they perform many tasks. And on millions of cars, they give daily proof that "When it's an Exide, you start."

For 59 years the name Exide has stood for dependability, economy, safety and long life. Information regarding the applications of storage batteries for any business or industrial need is available upon request.

Exide
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto



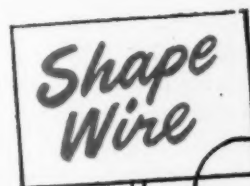
**IF YOU MAKE IT OF
WIRE
MAKE IT OF THE BEST**

We have **400** different types to choose from

PRODUCED in more than 400 different types, comprising almost every conceivable size, grade, shape and analysis, U·S·S American Quality Wire has been used in more than 160,000 different manufacturing applications . . . one of which is probably similar to *your* application.

American Quality Wire is backed by over 100 years of quality wire making experience. Its manufacture is precisely controlled from ore to finished product. Because it is always uniform in analysis, strength and gauge it meets specifications exactly . . . permits trouble-free production.

Our engineers will gladly go over your wire problems with you, to help you determine which American Quality Wire is best suited to your needs.



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Cleveland, Chicago and New York
COLUMBIA STEEL COMPANY
San Francisco
Tennessee Coal, Iron & Railroad Company, Birmingham, Southern Distributors
United States Steel Export Company, New York
UNITED STATES STEEL

If you make it of wire . . . make it of the best

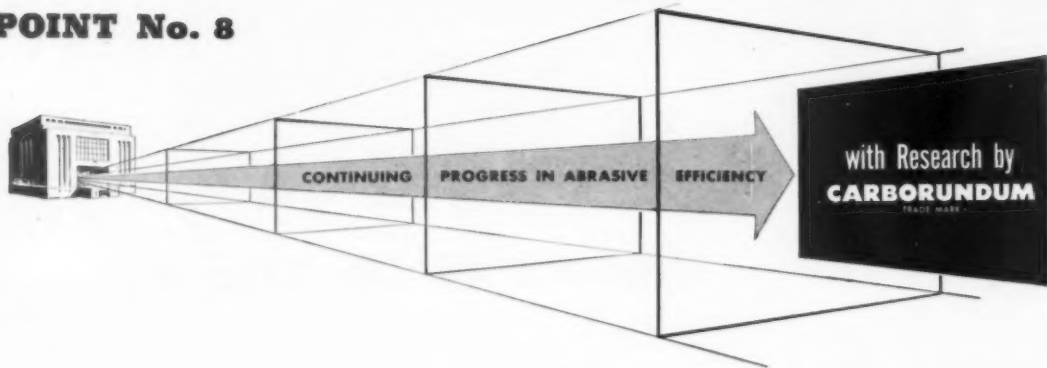
**U·S·S AMERICAN
QUALITY
WIRE**



... Available now for immediate delivery

A BUYING GUIDE FOR ABRASIVES

POINT No. 8



Research and Development

The Carborundum Company is considered a good source of supply for abrasive products because of its outstanding research accomplishments. Research at The Carborundum Company is aimed at developing uniform abrasive products that cut faster...cut cooler...grind more pieces per wheel...improve the finish and, in other ways, improve grinding efficiency.

Because abrasive research is part of the very foundation of The Carborundum Company, users can rely on abrasives by CARBORUNDUM as being in the forefront of technical improvement. It is this assurance which leads so many manufacturers, noted for production efficiency, to prefer abrasives by CARBORUNDUM. The Carborundum Company, Niagara Falls, N. Y.

A Good Rule for Good Grinding... CALL IN

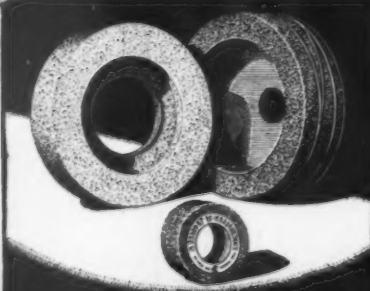
CARBORUNDUM

TRADE MARK

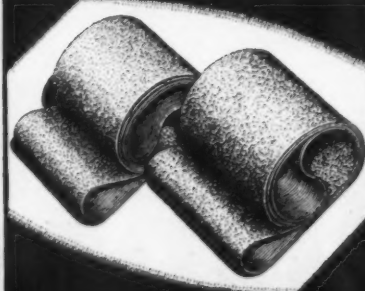
- BONDED ABRASIVES
- COATED ABRASIVES
- ABRASIVE GRAINS AND FINISHING COMPOUNDS



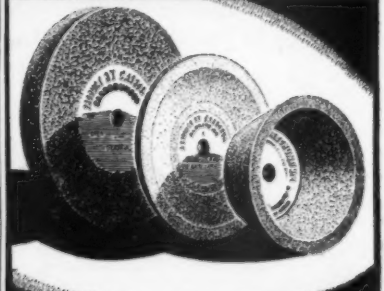
"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company.



Cool-cutting green grit wheels for cemented carbide



A coated abrasive for every sanding and finishing condition.



All standard shapes are supplied in grinding wheels by CARBORUNDUM.

Specialized wheels by CARBORUNDUM for thread grinding

Diamond wheels to meet stiffer technical needs



When tomorrow is too late—when only the best will do—ask your Bunting Distributor. He has, available now, Bunting Bars of Bearing Bronze and Bunting Standard Stock Bronze Bearings—Quality Bronze in its most usable forms. The Bunting Brass & Bronze Company, Toledo 9, Ohio. Branches in Principal Cities.

PRECISION BRONZE BARS

BRONZE BEARINGS

BUSHINGS

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Un-roll your own

**... and cut shapes to suit the job or
we can die-cut them to your order**

WHERE tough, flexible and resilient forms of blown sponge rubber sheet are needed in your processes or product, you'll say Spongex* is "just made" for your requirements.

For manufacturers who prefer to use their own facilities for the production of die-cut gaskets and other special shapes, we furnish Spongex sheet stock made to their specifications. In thickness up to 1", it can be had in many densities, in continuous sheet rolls, or in smaller sections.



*Spongex**

sheet stock
in rolls
or cut shapes



Our die-cut gaskets, and other forms made from sheet stock, are produced in any desired size or shape in a variety of densities. They may be had in various thicknesses depending on application or requirements with skin on one or both sides.

Send for descriptive circulars and samples as required for experimental purposes. We solicit correspondence from manufacturers with gasketing, sealing or other requirements. Sponge Rubber Products Co., 267 Derby Place, Shelton, Conn. Sales Offices in principal industrial centers.

*Trade Mark Reg. U. S. Pat. Off.

SPONGEX*

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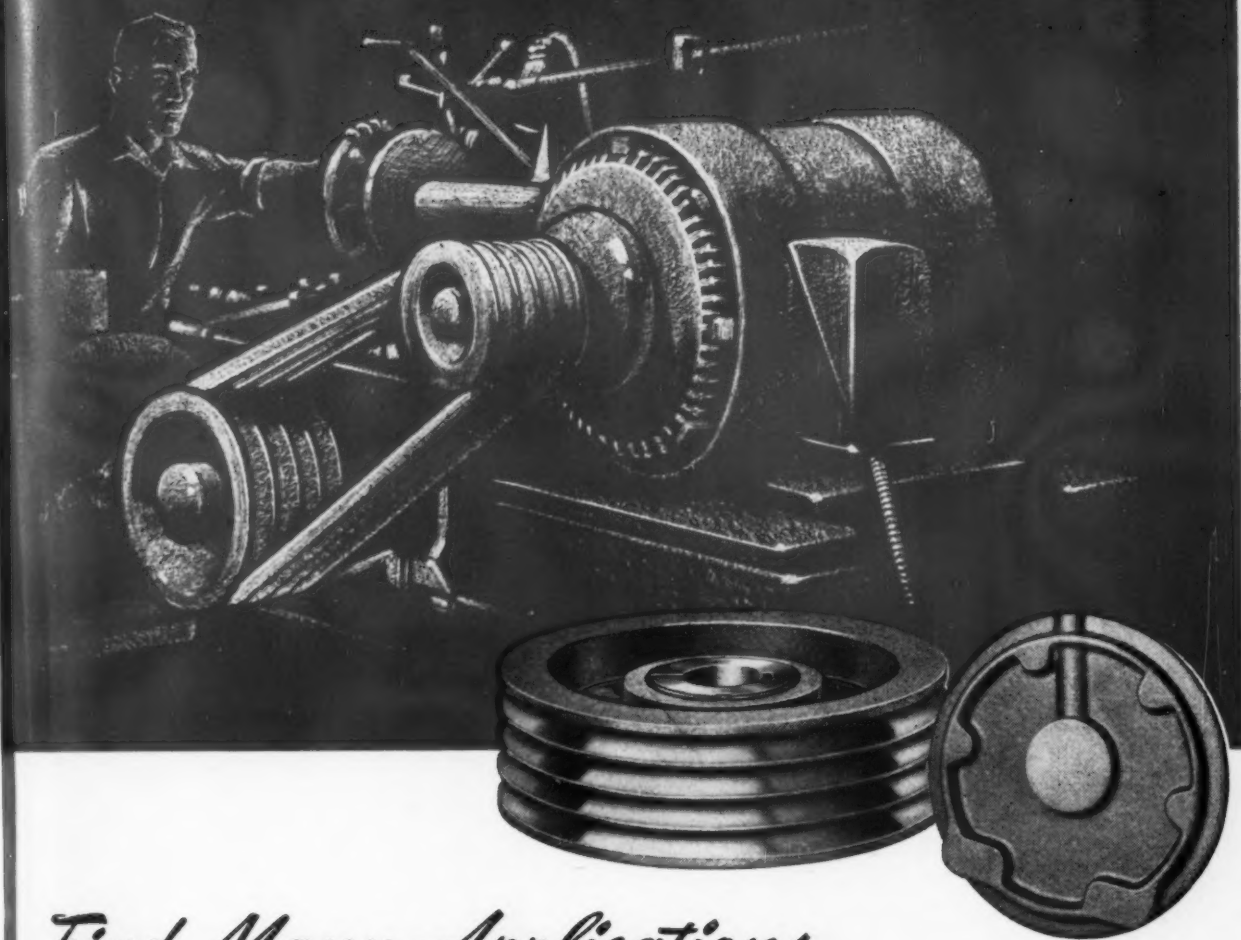
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SPONGE RUBBER PRODUCTS CO.

WORLD'S LARGEST MANUFACTURER OF CELLULAR RUBBER AND BONDED FIBRE PRODUCTS

EATON PERMANENT MOLD GRAY IRON CASTINGS



Find Many Applications in Electrical Manufacturing

For the vast number of applications in the field that might be classified as "electrical manufacturing," Eaton Permanent Mold Gray Iron Castings offer an ideal combination of characteristics. Motor housings, sheaves, vee-belt pulleys, bearing housings—these are just a beginning of an almost endless list of applications in which Eaton Permanent Mold Gray Iron Castings are adding to efficiency, long life, and trouble-free operation.

Specific characteristics of Eaton Permanent Mold Gray Iron Castings include high tensile strength, a dense non-porous structure which is

uniform throughout the casting, ability to take a high surface finish, and freedom from segregation. Proper annealing assures freedom from growth or distortion after machining. Free machinability makes for fast uninterrupted machining and a high percentage of perfect parts.

Eaton Foundry Division engineers will be glad to discuss the application of Eaton Permanent Mold Gray Iron Castings to your product.

Send for your copy of the illustrated booklet, "*A Quick Picture of the Eaton Permanent Mold Process for producing Gray Iron Castings.*"



THE EATON PERMANENT MOLD MACHINE IS A SYMBOL
OF THE QUALITY OF GRAY IRON CASTINGS PRODUCED
BY THE PERMANENT MOLD PROCESS.

EATON

MANUFACTURING COMPANY
FOUNDRY DIVISION

9771 French Road

Detroit 13, Michigan



"WE'VE USED
Ⓟ BOLTS FOR
YEARS"

Customers know from experience that dependable bolts and nuts are an asset in the manufacture of their products. That's why so many of them use Circle Ⓟ Bolts and Nuts year after year . . . because they know they can depend on the uniform size and strength of these quality products.



BUFFALO BOLT COMPANY

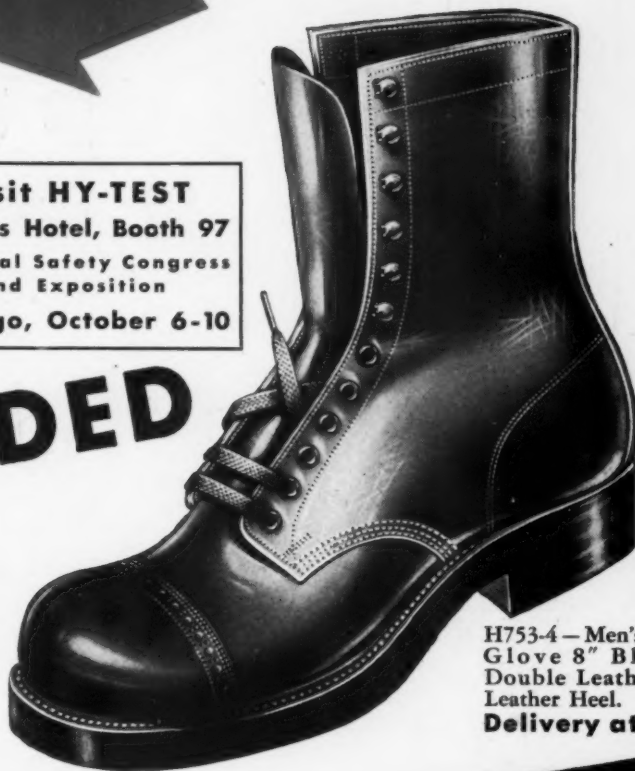
NORTH TONAWANDA, N. Y. • SALES OFFICES IN PRINCIPAL CITIES
Export Sales Office: Buffalo International Corp., 50 Church Street, New York City

PROTECTION



Visit HY-TEST
 Stevens Hotel, Booth 97
 National Safety Congress
 and Exposition
 Chicago, October 6-10

WHERE NEEDED



H753-4—Men's Russet
 Glove 8" Blucher,
 Double Leather Sole,
 Leather Heel.
Delivery at once.

Insure Workers Feet In Sure Protection with **HY-TEST** Safety Shoes

ANCHOR FLANGE STEEL BOX TOE

Catching foul tips is the all-seasons job of Hy-Test's Anchor Flange Steel Box Toes. That's a *big* job in the accident league where serious, costly toe injuries are always popping up. Hy-Test anchors the steel toe under sturdy, pliant leathers for a

smoothly patterned safety shoe that feels better, looks better, and wears longer. Sizes are 5 to 15 in widths of AA to EEE. Make it possible for your workers to buy Hy-Test Safety Shoes in your plant. Drop us a card for details.



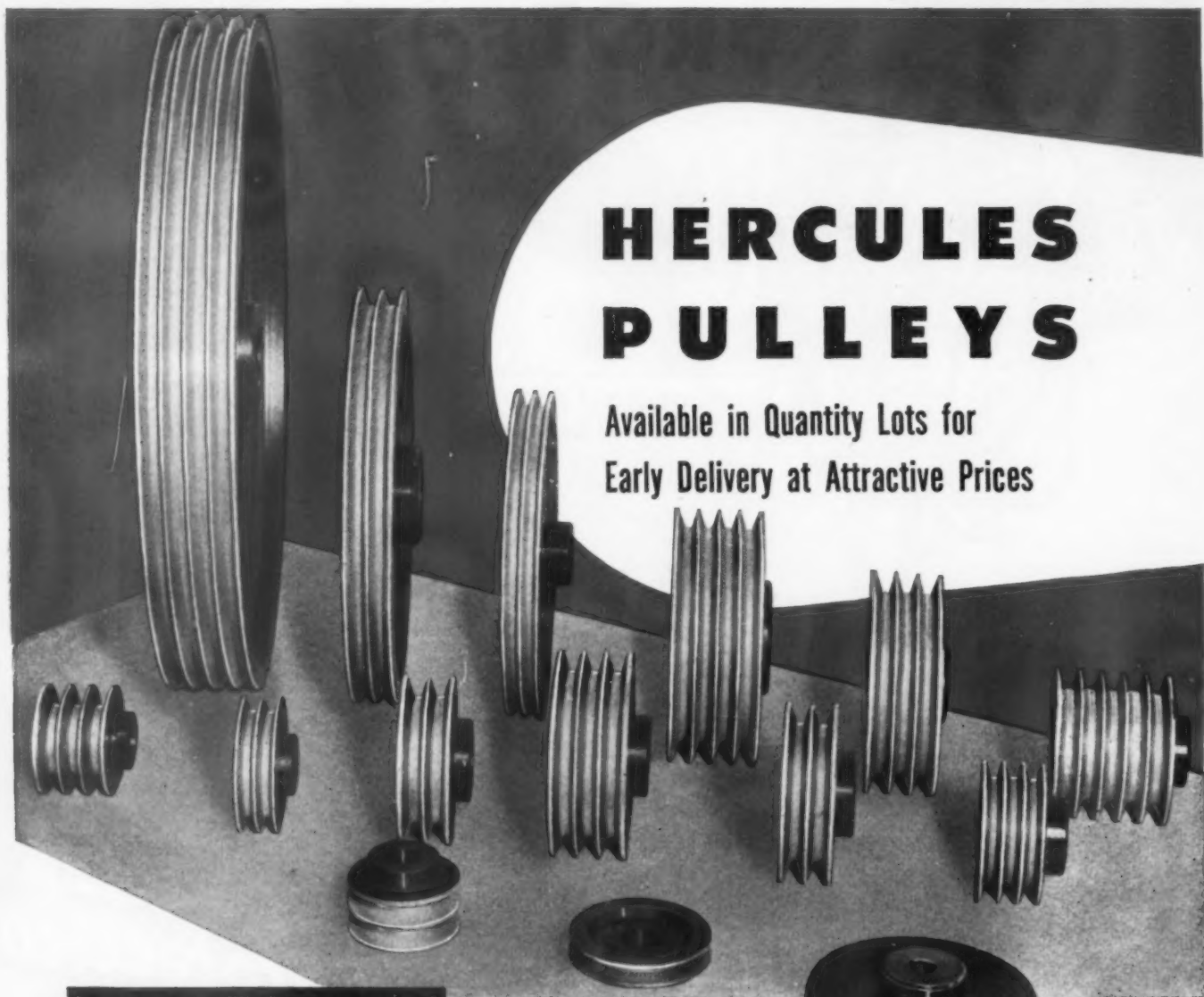
THE WORLD'S LARGEST SELLING SAFETY SHOE.



Anchor flange adds extra strength to steel arch's sidewall. Anchored between insole and outsole, it also resists shifting, tilting, and bending through outsole under impact.

HY-TEST Safety Shoes

TEST DIVISION • INTERNATIONAL SHOE COMPANY • ST. LOUIS 3, MISSOURI • EASTERN OFFICE • MANCHESTER, N. H.



HERCULES PULLEYS

Available in Quantity Lots for
Early Delivery at Attractive Prices

SPECIFICATIONS

- 1 Accurately machined and finished.
- 2 All grooves machined to rubber manufacturer's standards.
- 3 Free from pit holes and tool marks.
- 4 Carefully balanced statically.
- 5 Vibration at a minimum.
- 6 Easy on belts.
- 7 Minimum weight with ample strength.
- 8 Standard in design.
- 9 Wide selection meets all average requirements.
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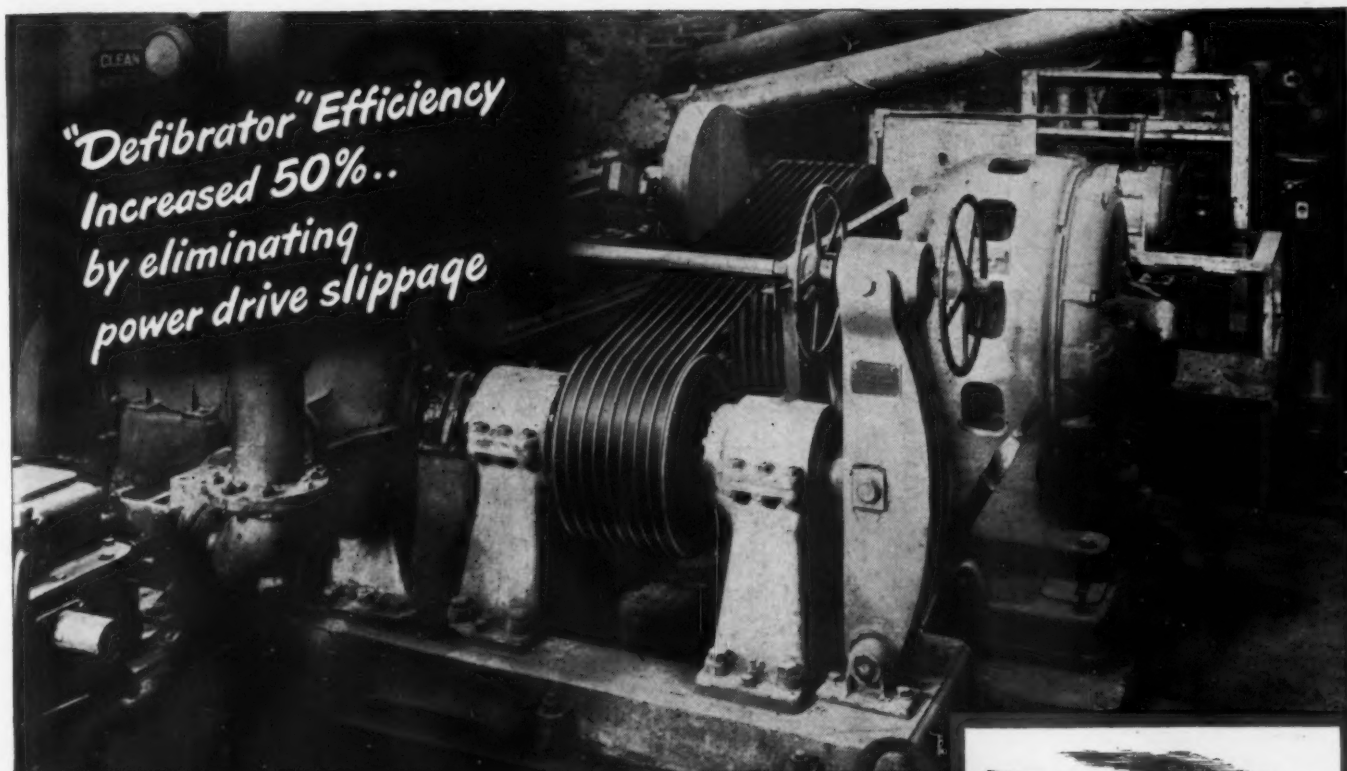
Specials on quantity orders.

Your rigid requirements will be met by this new pulley. Made by a manufacturer in the light and heavy machinery field since 1902, these "Hercules" Pulleys benefit from a know-how and a thorough knowledge of industry's need.

With cognizance of the competitive field, all has been done to present a pulley well worthy to stand the test . . . plus a margin meriting strong recognition. In the design and making of Hercules Pulleys, there was close coordination with the requirements of leading V-Belt manufacturers.

Complete information on Hercules Pulleys will be sent to you at your request. An order now will have pulleys to you quicker than you hope for . . . at a price you'll label "a good purchase."

The HERMANN Manufacturing Co.
LANCASTER, OHIO



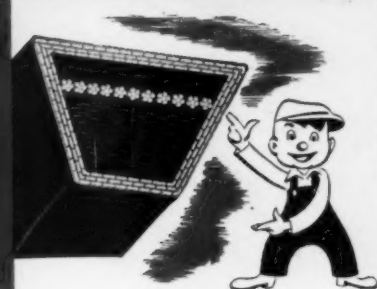
WHY DAYTON V-BELTS Eliminate Slippage

Pulverizing 16 to 18 cords of wood a day into pulp used in manufacturing sound-deadening and roofing felts is a tough job. The original belts on the power drive for the wood "defibrator" machine frequently slipped, often stalling the machine completely. To eliminate belt slippage, the original drive was replaced by a Dayton V-Belt Drive seven years ago. Machine efficiency immediately increased 50% and excessive wear on machine parts, due to frequent starting and stopping, has been greatly reduced.

Dayton V-Belts eliminate slippage because, as the pull on the V-Belt increases, it seats itself, actually wedges itself, firmly in the pulley grooves. That's why extra heavy loads merely cause Dayton V-Belts to take a tighter grip on pulleys and continue to deliver power positively and smoothly. Call your Dayton Distributor today.

DAYTON RUBBER • DAYTON, OHIO

Branch Offices: Atlanta • Boston • Chicago • Cincinnati • Cleveland • Dallas
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NOW!

* *Rayon Cords*

Provide Dayton V-Belts
with

1. MINIMUM STRETCH
2. GREATER FLEX STRENGTH
3. LONGER V-BELT LIFE

* Rayon cords are specially processed by Dayton for use in V-Belts to provide the most efficient and economical power transmission service for your needs. For the complete story write for booklet A-469.



V-BELT BUYERS!

A leading mill supply house near you stocks Dayton V-Belts...
Look for the name in the yellow pages of your telephone directory

Dayton Rubber

THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER
THE WORLD'S LARGEST MANUFACTURER OF V-BELTS



Exceptional Quality **HIGH LEAD BEARINGS**
 THAT COST LITTLE MORE THAN BEARINGS OF STANDARD ANALYSIS

FOR PRECISION airplane parts, pumps, seal rings, important high speed shafts, and in other places where bearing failure would involve critical delays, use Buckeye Lubrico Bearings. They combine a reduced coefficient of friction, excellent conformity to overcome slight shaft misalignment, qualities of self lubrication, good resistance against pounding, and the ability to withstand heavy shock without cracking.

Manufactured from selected metals under

Buckeye's exacting laboratory and metallurgical control, these bearings have uniform dissemination of lead throughout. They are free from porosity, and accurately dimensioned assuring speedy, easy assembly. Furnished in any of our 1088 stock sizes, or to customers ID, OD and length; slotted, drilled, flanged or threaded exactly to blue-print. Furnished in three different metal analyses, for light, general, and extremely heavy duty services. Let us quote on your requirements.

Buckeye

BRASS AND MANUFACTURING COMPANY

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BRONZESMITHS

SINCE 1900

CLEVELAND 3, OHIO



**BRONZE SLEEVE BEARINGS • STANDARD SIZES OR TO CUSTOMERS' BLUEPRINT
 IN ANY RECOGNIZED BEARING METAL ANALYSIS**

THROUGH THE YEARS...

UNCHALLENGED QUALITY



SOLVAY PRODUCTS

FOR SOAP MANUFACTURERS

Caustic Potash

Caustic Soda

Soda Ash

Potassium Carbonate

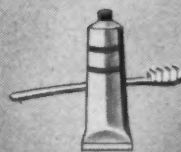
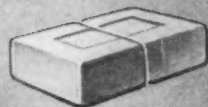
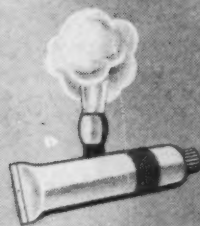
Calcium Chloride

SOLVAY SALES CORPORATION

Alkalies and Chemical Products Manufactured by The Solvay Process Company

40 RECTOR STREET

NEW YORK 6, N. Y.



Get Double Protection Against Motor Burnouts from Overloads or Single Phasing— *By Installing* **FUSETRONS**

"In Seven Years We have Not Lost a Motor Due to Single Phasing When Protected with Fusetrons"

"City water pumps are driven by four 20 h.p. three phase 440 volt 24 ampere motors. The motors are equipped with overload relays.

"In the first three years after these motors were installed in 1935, two were burned out from single phasing.

"Mr. S. O. Petterson, our City Water Works Electrician, in August, 1938, installed 30 ampere Fusetrons to protect these motors.

"On September 5, 1938, a severe electrical storm hit this area, causing many phase failures in power lines. Three of the four pump motors at Alderwood Station were operating at the time. Each single phased and each came off the line with no damage, other than the blowing of the Fusetrons. When the Fusetrons were replaced, everything worked perfectly as though there had been no storm. In the seven years since then we have not lost a single one of these motors.

"The next day after the storm, I said to Mr. Petterson, 'Those gadgets you call Fusetrons are certainly the finest protection ever devised for motors. They saved us over \$300.00 last night!'"

Herbert J. Carson
Asst. Supt. Water Department
City of Everett, Washington

**Here's Proof
from a
Fusetron
User—**

BUSS

At Little or No Extra Cost — Fusetrons Provide Extra Safety for Motors

IT'S TRUE that most large motors are protected with thermal cutouts or overload relays—BUT experience shows that such mechanical devices sometimes fail to operate, and you may burn out a motor.

At little or no extra cost Fusetrons, on normal installations, eliminate this danger by giving your motors DOUBLE PROTECTION against burnout from single phasing or any dangerous overload. You simply replace fuses used for short-circuit protection with Fusetrons of motor-running protection size. Then, you get short-circuit protection plus motor-running protection.

Why Fusetrons Give Motor-Burnout Protection

Fusetrons have a tremendous time-lag which ordinary fuses and circuit breakers do not have. This means that Fusetrons can be used in a size close to the actual running current of the motor, while ordinary fuses and circuit breakers must be installed oversize to hold the motor starting current.

Therefore, ordinary fuses or circuit breakers can give only short-circuit protection. They cannot protect either the motor or the starter against burnout.

But, on normal installations, when Fusetrons of proper size are used, any current dangerously in excess of normal motor running current will cause them to open. Thus, they protect should other overload devices fail — they give the motor double protection against burnout.

Provide the Simplest Way To Prevent Damage from Single Phasing.

When single phasing occurs, the current flowing through the motor, and through the Fusetron, in the remaining phase increases nearly 100%. This 100% overload will open a Fusetron of motor-running protection size and stop the flow of current before the motor can be damaged.

WHY THIS EXTRA SAFETY FOR YOUR MOTORS COSTS YOU LITTLE OR NOTHING

Large size fuses are replaced with SMALLER size Fusetrons. This means a step down in the price range.

For example: The lowest cost 100 amp. 250 volt fuse costs approximately \$0.40. A 60 amp. Fusetron to replace it costs about \$0.36 — (BUSS Fuse Reducers to make the change possible cost but little and need never be replaced.)

That is why you need not worry about the cost of replacing fuses with Fusetrons even though installing Fusetrons means that you REDUCE MANY, MANY TIMES THE CHANCE OF HAVING A MOTOR BURN OUT.

On new installations you ACTUALLY SAVE MONEY because proper size switches or panels are installed, instead of oversize equipment needed to take fuses large enough to hold motor starting current. The smaller size Fusetrons further reduce costs.

FUSETRONS

SOLD THROUGH WHOLESALERS



What is the FUSETRON?

- The Fusetron is a DUAL element device — A Fuse to which is added a Thermal Cutout.
- The result is a fuse with tremendous time-lag and much less electrical resistance.

- Fusetrons have the same degree of Underwriters' Laboratories approval for both motor-running and circuit protection as the most expensive devices made.
- Fusetrons are made to same dimensions as ordinary fuses and fit all standard fuse holders.
- They are obtainable in all sizes from 1/10 to 600 ampere — in both 250 and 600 volt types.
- Also obtainable in plug type and tamper-resisting type (Fustats) for 125 volt circuits.
- Their cost is surprisingly low.

Fusetrons Provide Many Kinds of Protection Not Provided by Ordinary Protective Devices — if Installed throughout the Electrical System.

★ Entirely wipe out needless blows caused by motor starting currents or other harmless overloads. ★ Give Thermal Protection to Panelboards and Switches. ★ Prevent Needless Blows caused by Heating in Panels and Switches. ★ Permit use of larger motor or adding more motors on circuit WITHOUT installing larger switch or panel. ★ On new installations, PROPER size switches and panels can be used instead of OVERSIZE. ★ Protect motors against burnout. ★ Give DOUBLE protection to large motors. ★ Provide simplest way to stop burnouts from single phasing. ★ Make burnout protection of SMALL motors simple and inexpensive. ★ Protect coils, Transformers and Solenoids against burnout.

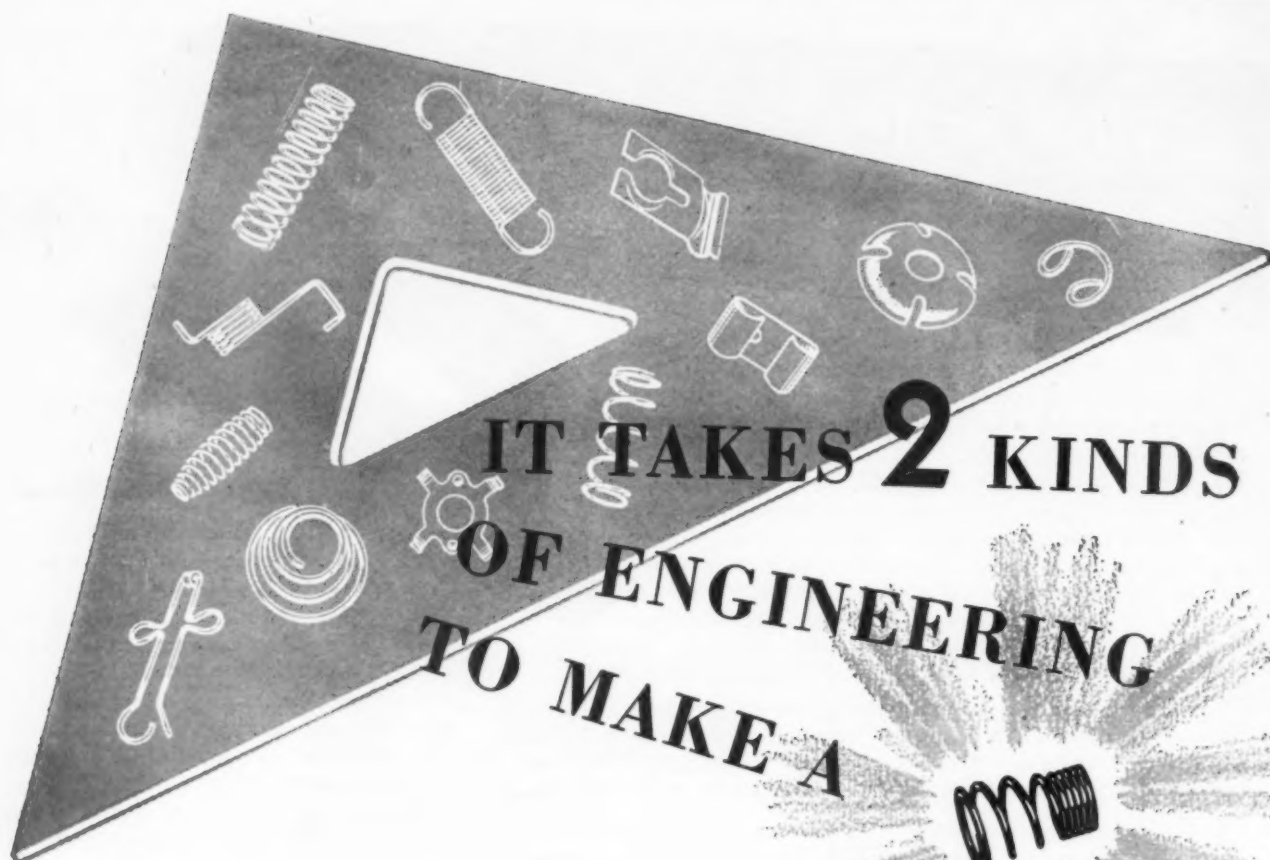
Get All The Facts . . .

Get Better Protection — Send the Coupon Now

Even one lost motor or one needless shutdown or one destroyed panel may cost you more than replacing every fuse with a Fusetron. Don't risk such losses. Change over the whole plant to Fusetrons.

Bussmann Mfg. Co., University at Jefferson
St. Louis 7, Mo. (Division McGraw Electric Co.)
Please send me complete facts about BUSS
Fusetrons.

Name _____
Title _____
Company _____
Address _____
City _____ State _____



When your spring specifications call for extra close limits, accuracy at different load tests, tricky bends or end treatment—it's no simple matter to meet them—without costly second operations—unless

. someone gives those specifications a good going over for production problems. Here at Wallace Barnes are men who know how to utilize machinery, materials and methods to get the results you want, in the fewest operations. This knowledge, applied in the early stages of your design, may also simplify your problems—or help to avoid costly and unnecessary motions. It's worth a try; next time you plan a spring, let us help, too!

Wallace Barnes SPRINGS

SMALL STAMPINGS • WIRE FORMS • HAIRSPRINGS • COLD ROLLED SPRING STEEL

WALLACE BARNES COMPANY
BRISTOL, CONN.

DIVISION OF THE ASSOCIATED SPRING CORP.

AND IN CANADA, THE WALLACE BARNES CO., LTD., HAMILTON, ONTARIO

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HOW TO SAVE LABOR AND POWER IN ROPE USE

PLYMOUTH
Lifesaver

Proper use of a few simple physical laws means greater safety to workers in using ropes for hoisting—and a dollar-wise saving of time, labor and power on the job. This series of pictures and formulas will enable foremen and workers to use blocks efficiently for lifting and moving heavy loads. Always remember that safe loads for rope are higher than those for blocks. See table on reverse side.

Determining the Proper Factor of Safety and Size of Rope for Tackle

To find the pull required to lift a given weight, when the number of parts at the movable block is known—the weight to be lifted by the tackle, divided by the number of ropes, or parts running from the movable block, will equal the necessary pull on the fall, *theoretically*.

But as there is always a friction loss around sheaves, a safe, but only approximate rule, is to allow 10% friction loss for each sheave 3" diameter and larger. Add this friction loss to the load and proceed as if friction were not present.

Let us assume 5,000 lbs. to be lifted by a tackle—two double

blocks—4 sheaves and 4 parts at the movable block.

$$4 \times 10\% = 40\%. \quad 5,000 \text{ lbs.} + 40\% = 7,000 \text{ lbs.}$$

$$7,000 \text{ lbs.} \div 4 = 1,750 \text{ lbs. necessary pull on the fall.}$$

Assuming a factor of safety of 5 to 1 as most desirable —
 $1,750 \times 5 = 8,750 \text{ lbs. required tensile strength in the rope used.}$

Plymouth Manila Rope 1-inch diameter 3-inch circ. minimum break 9,000 lbs. is a safe rope to use. (See Plymouth Safe Working Loads for Tackle Blocks on reverse side.)



Single whip, 1 sheave. No mechanical advantage. 100 lbs. to be lifted.
 $1 \times 10\% = 10\%$ friction loss at sheave.
 $100 \text{ lbs.} + 10\% \times 100 \text{ lbs.} = 110 \text{ lbs.}$
 $\frac{110 \text{ lbs.}}{1} = 110 \text{ lbs. to lift the load.}$

A more accurate computation is as follows:

$$\frac{100 \text{ lbs.}}{1 \times .90} = 111 \text{ lbs.}$$



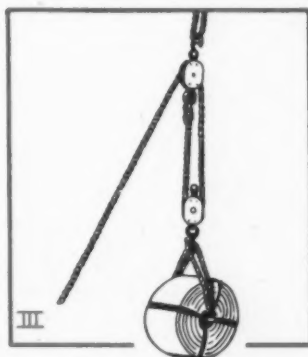
Single running block, 1 sheave. Mechanical advantage 2. 100 lbs. to be lifted.

$$1 \times 10\% = 10\% \text{ friction loss at sheave.}$$

$$100 \text{ lbs.} + 10\% \times 100 \text{ lbs.} = 110 \text{ lbs.}$$

$$\frac{110 \text{ lbs.}}{2} = 55.5 \text{ lbs. to lift the load.}$$

$$\text{Second method: } \frac{100 \text{ lbs.}}{2 \times .90} = 55.5 \text{ lbs.}$$



Gun Tackle, 2 single blocks, 2 sheaves. Mechanical advantage 2. 100 lbs. to be lifted.

$$2 \times 10\% = 20\% \text{ friction loss.}$$

$$100 \text{ lbs.} + 20\% \times 100 \text{ lbs.} = 120 \text{ lbs.}$$

$$\frac{120 \text{ lbs.}}{2} = 60 \text{ lbs. to lift the load.}$$

$$\text{Second method:}$$

$$\frac{100 \text{ lbs.}}{2 \times .90 \times .90} = 61.7 \text{ lbs.}$$



Gun Tackle, 2 single blocks, 2 sheaves—same number as Fig. III, but position of tackle reversed. Mechanical advantage 3. 100 lbs. to be lifted.

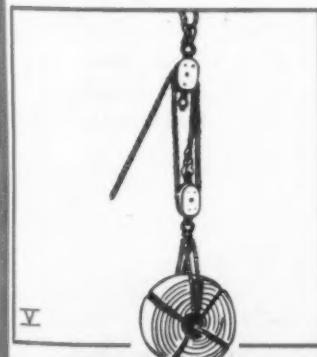
$$2 \times 10\% = 20\% \text{ friction loss.}$$

$$100 \text{ lbs.} + 20\% \times 100 \text{ lbs.} = 120 \text{ lbs.}$$

$$\frac{120 \text{ lbs.}}{3} = 40 \text{ lbs. to lift the load.}$$

$$\text{Second method:}$$

$$\frac{100 \text{ lbs.}}{3 \times .90 \times .90} = 41.2 \text{ lbs.}$$



Luff or Watch Tackle, 1 single and 1 double block, 3 sheaves—3 supporting parts. Mechanical advantage 3. 100 lbs. to be lifted.

$$3 \times 10\% = 30\% \text{ friction loss.}$$

$$100 \text{ lbs.} + 30\% \times 100 \text{ lbs.} = 130 \text{ lbs.}$$

$$\frac{130 \text{ lbs.}}{3} = 43.3 \text{ lbs. to lift the load.}$$

$$\text{Second method:}$$

$$\frac{100 \text{ lbs.}}{3 \times .90 \times .90 \times .90} = 45.7 \text{ lbs.}$$



Luff or Watch Tackle, Same as Fig. V, but position of tackle reversed. 3 sheaves. Mechanical advantage 4. 100 lbs. to be lifted.

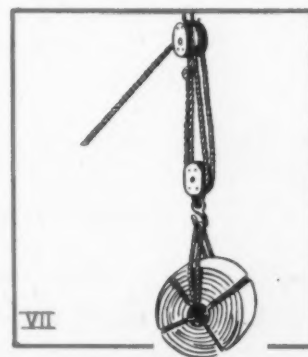
$$3 \times 10\% = 30\% \text{ friction loss.}$$

$$100 \text{ lbs.} + 30\% \times 100 \text{ lbs.} = 130 \text{ lbs.}$$

$$\frac{130 \text{ lbs.}}{4} = 32.5 \text{ lbs. to lift the load.}$$

$$\text{Second method:}$$

$$\frac{100 \text{ lbs.}}{4 \times .90 \times .90 \times .90} = 34.3 \text{ lbs.}$$



2 double blocks—4 sheaves. Mechanical advantage 4. 100 lbs. to be lifted.

$$4 \times 10\% = 40\% \text{ friction loss.}$$

$$100 \text{ lbs.} + 40\% \times 100 = 140 \text{ lbs.}$$

$$\frac{140 \text{ lbs.}}{4} = 35 \text{ lbs. to lift the load.}$$

$$\text{Second method:}$$

$$\frac{100 \text{ lbs.}}{5 \times .90 \times .90 \times .90 \times .90} = 38.1 \text{ lbs.}$$



2 double blocks, same as Fig. VII, but position of tackle reversed. 4 sheaves. Mechanical advantage 5. 100 lbs. to be lifted.

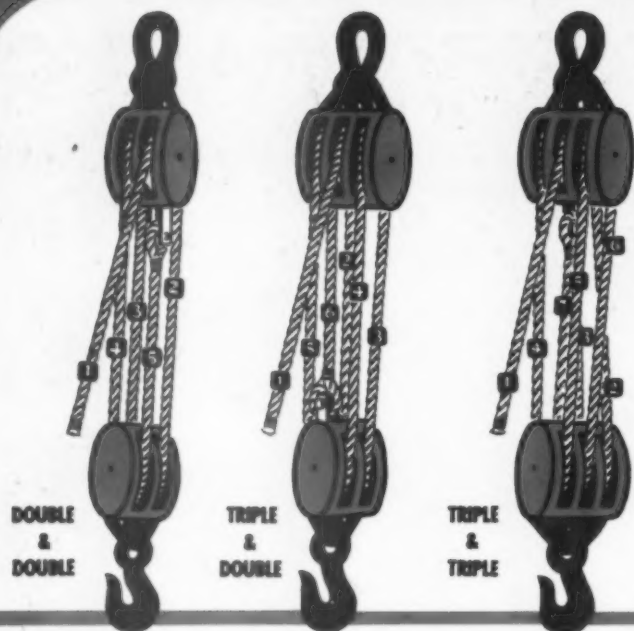
$$4 \times 10\% = 40\% \text{ friction loss.}$$

$$100 \text{ lbs.} + 40\% \times 100 = 140 \text{ lbs.}$$

$$\frac{140 \text{ lbs.}}{5} = 28 \text{ lbs. to lift the load.}$$

$$\text{Second method:}$$

$$\frac{100 \text{ lbs.}}{5 \times .90 \times .90 \times .90 \times .90} = 30.5 \text{ lbs.}$$



PROPER REEVING OF TACKLE BLOCKS

REEVING TACKLE BLOCKS

Lead line and becket line should come off a middle sheave when blocks contain more than two sheaves. The tackle should be reeved so that the upper and lower blocks will then be at right angles to each other, eliminating the tendency to tip and the accompanying losses in efficiency.

SAFE WORKING LOADS FOR COMMERCIAL BLOCKS

REGULAR MORTISE INSIDE IRON STRAPPED BLOCKS FOR MANILA ROPE								HEAVY WIDE MORTISE BLOCKS FOR MANILA ROPE							
DIMENSIONS INCHES		WITH LOOSE SIDE HOOKS			WITH SHACKLES			DIMENSIONS INCHES		WITH LOOSE SIDE HOOKS			WITH SHACKLES		
LENGTH SHELL INCHES	FOR DIAMETER ROPE	DOUBLE AND SINGLE POUNDS	TWO DOUBLES POUNDS	TWO TRIPLES POUNDS	DOUBLE AND SINGLE POUNDS	TWO DOUBLES POUNDS	TWO TRIPLES POUNDS	LENGTH SHELL INCHES	FOR DIAMETER ROPE	DOUBLE AND SINGLE POUNDS	TWO DOUBLES POUNDS	TWO TRIPLES POUNDS	DOUBLE AND SINGLE POUNDS	TWO DOUBLES POUNDS	TWO TRIPLES POUNDS
3	3/8	200	300	400	400	800	1,200	6	3/4	1,500	2,000	2,500	1,600	3,000	4,000
4	1/2	400	550	700	800	1,400	1,800	7	1	1,700	2,450	3,200	2,000	3,800	4,800
5	5/8	500	750	1,000	1,100	1,700	2,100	8	1 1/8	2,200	2,900	3,600	2,400	4,700	6,700
6	3/4	1,000	1,500	2,000	1,600	2,400	3,000	10	1 1/4	3,000	3,750	4,500	4,000	7,000	9,000
7	7/8	1,500	2,000	2,500	2,000	3,000	3,700	12	1 1/2	3,600	4,800	6,000	5,000	9,000	12,000
8	1	1,700	2,450	3,200	2,400	3,600	4,400	14	1 3/4	4,400	5,700	7,000	6,500	11,000	15,000
10	1 1/8	2,600	3,400	4,200	4,000	5,400	6,400	16	2	6,000	7,500	9,000	8,000	14,000	18,000
12	1 1/4	3,000	3,750	4,500	5,000	8,000	10,000								

These tables are shown through the courtesy of the Boston & Lockport Block Company and show suitable loads for one series of their standard and heavy blocks. These should be used as a guide only in ordering without assuming any responsibility, as the loads will vary between blocks in the manufacturer's line and as between blocks in other manufacturers' lines, and it should be also noted that these are suitable working loads for blocks and not for rope. Safe working loads for rope are higher than the safe working load for blocks.

FREE! Plymouth will gladly mail you upon request additional copies of this valuable chart for every department of your plant or shop where tackle blocks are used. Foremen and workers will find it useful in protecting life and property—saving rope—cutting costs!

PLYMOUTH CORDAGE COMPANY, PLYMOUTH, MASSACHUSETTS. DISTRICT OFFICES: BOSTON, NEW YORK, CHICAGO, HOUSTON, SAN FRANCISCO. WAREHOUSE STOCKS: NEW YORK, BOSTON, PHILADELPHIA, BALTIMORE, HOUSTON, CHICAGO, SAN FRANCISCO. IN CANADA: SALES OFFICE—CORDAGE DISTRIBUTORS, LTD., TORONTO. MILL—WELLAND, ONTARIO.



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who want to save
time and money



"The Reform of the Rebellious Powder"

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Happy Ending: He meets a strong, dependable, economical container — Bemis Waterproof Laminated Textile Bags. Now our rebellious powder behaves perfectly. He has overcome his only fault. Everybody likes him, and he gives much credit for his popularity to puncture-resistant, siftproof Bemis Waterproof Bags.

PRE-TESTS STOP PROTESTS! Bemis Waterproof Laminated Textile Bags head off complaints because they are tested *before* they are put to work. Their strength and tear-resistant, puncture-resistant qualities are pre-proved for you. And their economy is attested by thousands of users.

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It's ideal for LCL and export shipments. It saves on container costs and, empty or filled, it saves storage space and freight costs.

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WATERPROOF DEPARTMENT

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He found phosphorus.

Alchemist Brand didn't know what he started. He couldn't foresee that one day chemistry would develop scores of products from phosphorus that serve you almost every minute of every hour. For, today, when you strike a match, bake a cake, brush your teeth, wash dishes, drill an oil well or rustproof a sheet of metal—you are benefited by just a few Monsanto products derived from phosphorus. There are many more, with still more under development.

MONSANTO . . . WORLD'S LARGEST

Monsanto's Phosphate Division is the world's largest commercial producer of elemental phosphorus, phosphoric-acid and phosphates for industry and food-products use. Every day, tons of phosphate rock are mined from Monsanto's huge deposits in Tennessee and later refined in batteries of electric furnaces to produce elemental phosphorus of better than 99.9% purity. This phosphorus is then converted at Monsanto plants into scores of products that are widely used by industry in serving mankind.

All told, Monsanto's production of phosphorus, phosphoric-acid and phosphates is a gigantic, far-reaching operation. It makes an enlightening story that is interestingly told in a new booklet—"PHOSPHORUS . . . The Light Bearer." Manufacturers, particularly, are invited to request copies from any Monsanto Office listed below.



Serving
Industry . . .
Which
Serves
Mankind

Good news for manufacturers

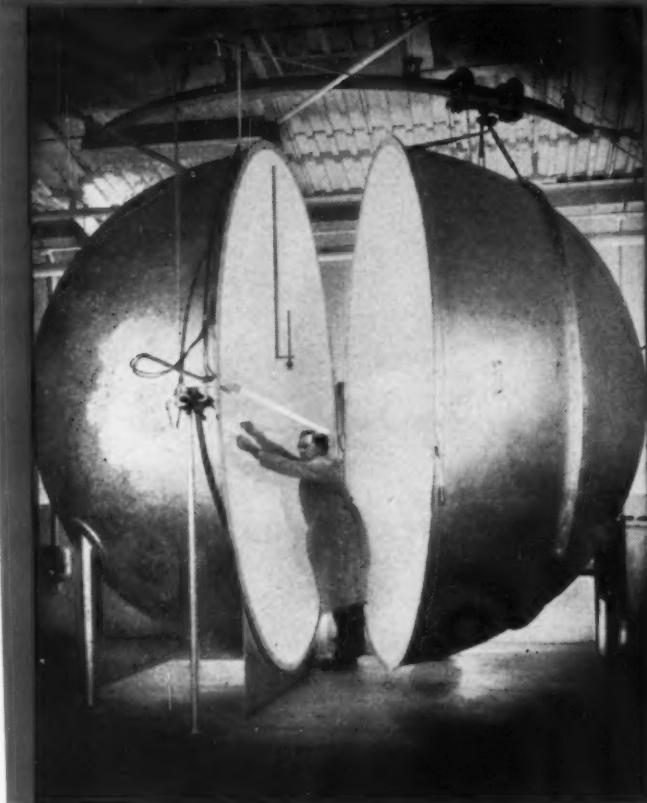
To meet growing demands for products of phosphorus, Monsanto is enlarging its present over-all capacity by more than 40%. This means that industry will be able to count on Monsanto with added assurance—for greater supplies of products now made from phosphorus and as a leader in the development and manufacture of entirely new derivatives of this basic material.

MONSANTO CHEMICAL COMPANY


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Dayton, Detroit, Houston, Los Angeles,
New York, San Francisco, Seattle,
Springfield, Washington, D. C.
In Canada: Monsanto (Canada)
Limited Montreal.

Two ways to be "on the ball" when you buy Fluorescent Lamps



1 **One way** would be to get yourself a big spherical photometer like the one above, which has just been installed in the General Electric lamp test laboratory. With this huge steel ball and its photoelectric instruments, you could measure the exact light output of even the latest "king-size" fluorescent lamps, right down to the last lumen. Once you learned how, that is. And then, to be a real fluorescent expert you'd also have to master the principles of electronics, physics, chemistry and metallurgy that affect lamp efficiency and uniformity. But who wants to go to all that trouble—especially when G-E Lamp research already *has*? When it comes to fluorescent lamp value, the easy way to be on the ball is to . . .

2 **Insist on the**  **monogram** whenever you order fluorescent lamps. More than 480 tests and inspections make sure that General Electric lamps are always up to standard. *And G-E Lamp research is constantly at work with one idea in mind—to make G-E lamps Stay Brighter Longer.

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GENERAL  ELECTRIC

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Ebonized switchboard
in large Eastern utility.

4 Questions 4 Answers

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Q: What is Ebonized Asbestos?

A: Ebonized Asbestos is a combination of asbestos fibres, a binder and an insulating compound—an ideal dielectric mounting for switches, controls, meters; for compartment linings, testing tables, cabinets, bus bar runs and supports.

Q: What about its dielectric strength?

A: Ebonized Asbestos has exceptionally high dielectric strength. It can be supplied in thicknesses from 1/8" to 4".

Q: How about absorption of moisture and oil?

A: Because of its composition, Ebonized Asbestos effectively resists the action of moisture and oil.

Q: Can it withstand shocks, vibration, rapid temperature changes?

A: Absolutely. This is because Ebonized Asbestos is molded under tremendous hydraulic pressure into a dense, tough, monolithic sheet that possesses very high mechanical strength. Yet it is readily workable; can be drilled and machined as needed.



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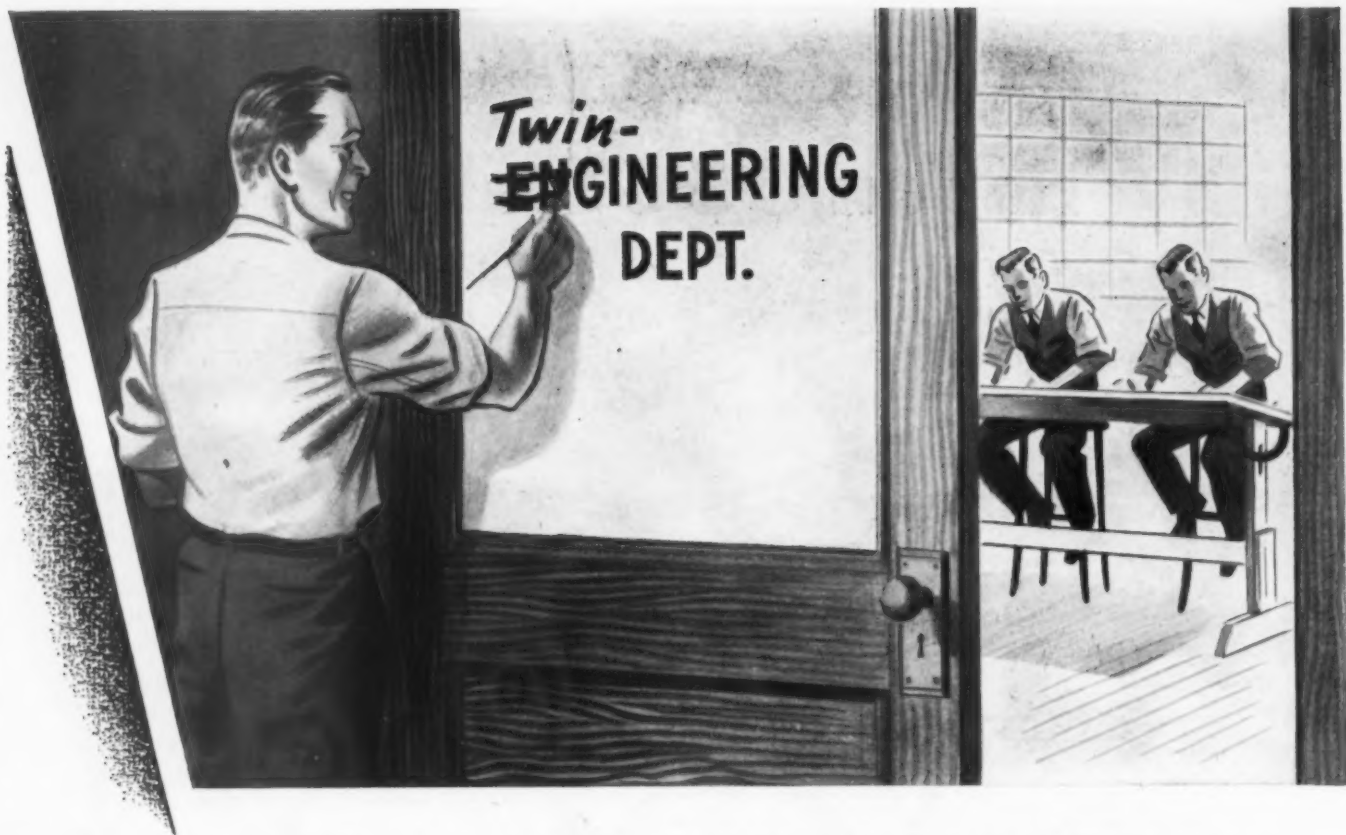
FOR STEEL USERS



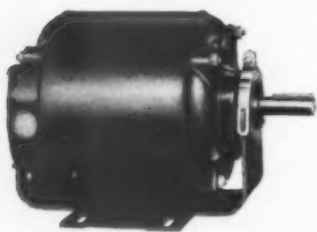
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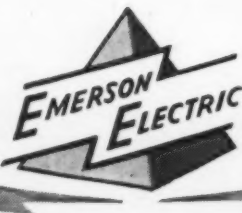
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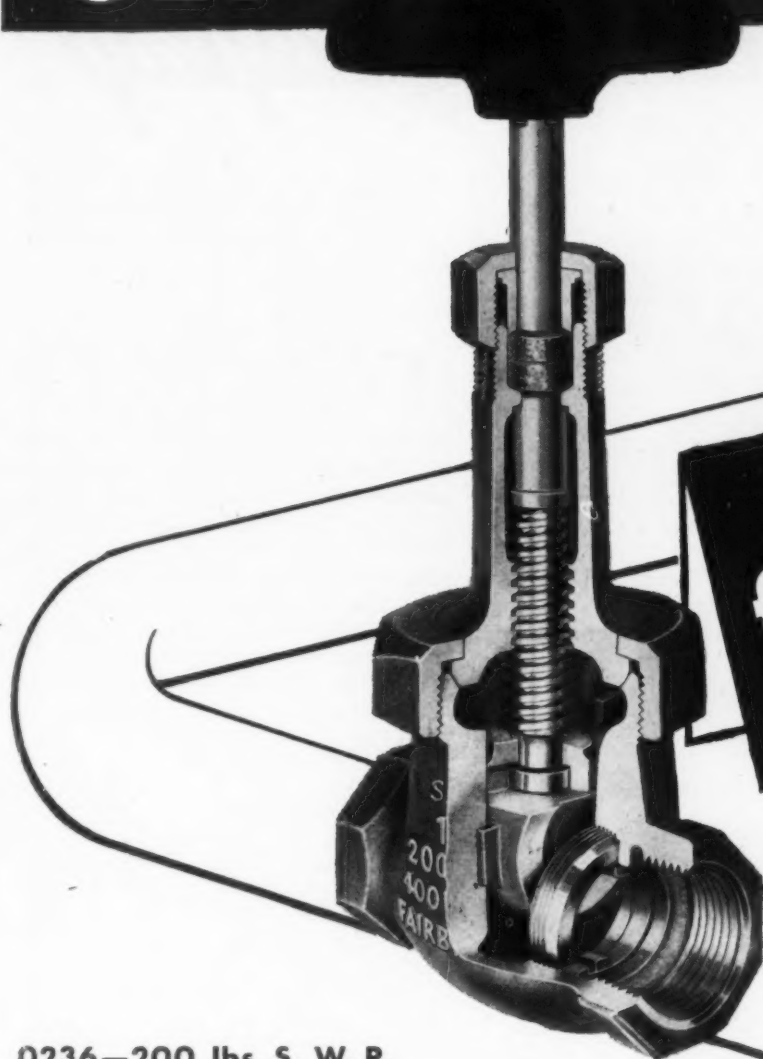
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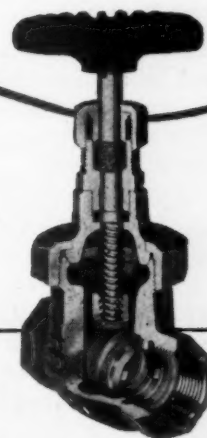


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Engineered in every detail to provide maximum service under the toughest operating conditions. Hard nickel alloy seats and wedges resist corrosion. Union Bonnet (with heavy octagonal nut) assures great strength, 100% tightness under pressure, yet permits quick, easy dismantling for cleaning and inspection. To eliminate high maintenance costs, shutdowns or other operating problems, install Fairbanks Union Bonnet Bronze Gate Valves. Recommended for steam (200 lbs.), water, oil or gas. Sizes ½" through 2". The Fairbanks Company, 393 Lafayette St., New York 3, N. Y.; 520 Atlantic Ave., Boston 10, Mass.; 15 Ferry St., Pittsburgh 22, Pa.; 748 M & M Bldg., Houston 2, Texas.



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Yes, indeed—Chase Bags are mighty good to have around your products—whatever they may be. Good because they're designed to best meet your packaging requirements.

Chase has had one hundred years of engineering experience in designing containers of all types—cotton, burlap, paper, open mesh, and waterproof bags for the extra protection of hard-to-carry, dry and wet products.

Your nearby Chase Salesman is technically trained to analyze your needs and specify the container that best combines protection and economy. He will be glad to consult with you.

Remember the name—Chase Bags—the better containers that are GOOD TO HAVE AROUND.

**COTTON BAGS • TOP MILL BURLAP BAGS
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F.O.B. *Philosophy of buying*

CREDIT the Purchasing Division of the Tennessee Valley Authority at Knoxville, Tennessee, for the following notice posted on their bulletin board. It could well be posted in every purchasing and requisitioning department.

The RUSH Job

I am a RUSH job.

I belong to no age, for men have always hurried.

I prod all human endeavor.

Men believe me necessary—but falsely.

I rush today because I was not planned yesterday.

I demand excessive energy and concentration.

I over-ride obstacles, but at great expense.

I illustrate the old saying, "Haste makes waste."

My path is strewn with the evils of overtime, mistakes and disappointments.

Accuracy and quality give way to speed.

Ruthlessly I rush on.

I am a RUSH job.

WE HAVE been requested by several readers to pass along in this column the ditty that was distributed at the recent N. A. P. A. Convention by Bob Schell of the Kimberly-Clark Corporation. We are glad to oblige. Here it is:

The Cocktail Hour

By Walter Cox

Between the dark and the daylight, when most of us feel pretty sour, comes a lull for a lovely libation that is known as the Cocktail Hour. It is then that the orange tree blossoms and lemons appear by the score; the Frigidaire's merry with music, and cracker crumbs cover the floor. The Bacardi flows like Niagara, the gin bottle gurgles its tune, the grenadine's red as a rosebud, rare as a day in June. The ice has now frosted the shaker, the glasses go clinketty-clink, and when that first cocktail goes in you—you know that you've guzzled a drink. A feeling of joy sneaks up on you,

your black flag of trouble is furled. In other words, baby, you're plastered, and everything's right with the world!!

AT A RECENT meeting of the Connecticut Association, we ran across what may be a unique father-and-son purchasing team—D. W. (Dan) Williams, Purchasing Agent of R. Wallace & Sons Mfg. Co., and his son, D. N. Williams of Wallingford Steel Co., both active members of the Association. (Dan is a past president of the organization.) We wonder whether any of the other associations can match this father-and-son combination. Let us know.

COMPETITION is with us again, and in some of its less savory manifestations. Referred to F.O.B. is a circular on office supplies, reviving that old selling bait of a "free" cigarette lighter, marked with the buyer's personal initials, for an order amounting to \$49 or more. Being "free", of course nobody loses. Or do they? That's the \$49 question that the buyer must answer to the satisfaction of his own conscience, and his business sense.

DECISIONS on problems of inventory balance and sound production programs must have a stronger background than intuition or wishful thinking, said L. W. Scott Alter, President of the American Tool Works Company, Cincinnati as he addressed the recent mid-year meeting of the Institute of Cooking and Heating Appliance Manufacturers on the topic, "Purchasing at the Management Level". In setting up his schedules, Mr. Alter continued, the top manager of a plant must study the flow of incoming orders and the existing backlog of orders, and then try as best he can to anticipate what future trends are likely to be.

Sound advice, which every purchasing agent will endorse. Mr.

Alter speaks with conviction and with authority, for the sound and strong background of his advice to management includes many years as purchasing agent for the company he now heads, and active participation in the affairs of the Cincinnati Purchasing Agents Association.

Purchasing was further represented at the conference by S. K. Harrington, Purchasing Agent for A-B Stoves, who was one of the discussion leaders at the meeting of the Electric Range Division.

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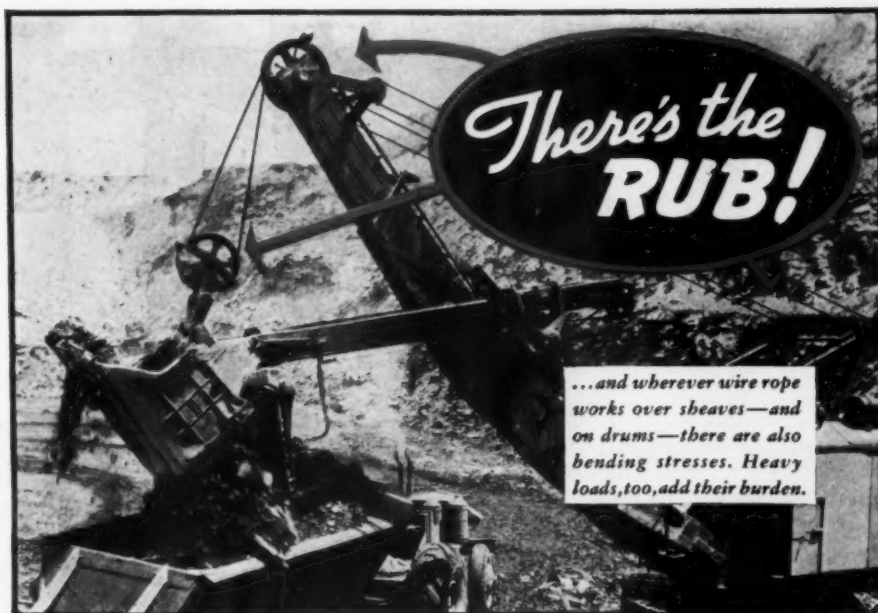
ONE OF OUR associates who has been struggling unsuccessfully to master the art of writing with one of the new ball-point pens, now refers to them as the instrument that can make six carbon copies but no original.

• •

THE surplus disposal program of the War Assets Administration gets a jolt with the prospect that another seven billion dollars' worth of material is being declared surplus by the armed services. With nineteen billion dollars' worth liquidated as of June 30, General Littlejohn figured that his job was 70% completed, and had hopefully set January 1, 1948, as the target for finishing the job. Now he finds that he's only 55% along the way, and the program will probably have to be extended another year. Competition is getting tougher as industry puts more and more new goods on the market, says the General, and consumers are showing a preference for the fresh merchandise despite the price advantages of surplus goods. The 18% recovery rate is likely to decline on future sales.

• •

PPRICE RESISTANCE in high places is revealed in current reports on the government's permanent stockpiling program for strategic and critical metals and minerals. There are 64 items on the list, but no more than one-third of these are being purchased in any substantial quantities, says the report. On the balance of the items, many of them available only from foreign sources, the Federal Bureau of Supply considers prices too high at present levels. There is evidence of active buying competition in those markets, particularly from Russia's comparable stockpiling program.



You can depend on "Hercules" (Red Strand) Wire Rope to meet all of these severe conditions, because it is the right combination and balance of strength, toughness and durability. As it is made in Round Strand and Flattened Strand constructions — both Preformed and Non-Preformed — there is a correct type for every heavy duty purpose. When you adopt the (Red-Strand) as your wire rope guide, you are assured of faster and more economical production.



Ask our Engineering Department to recommend the type and construction best suited to your needs.

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Purchasing Previews



A Washington Report for Purchasing Agents

September 1, 1947

COAL WAGE BOLSTERED INVENTORY VALUES . . .

Economic time-table has been revised to take recent developments into account. The forecasts of an imminent recession have been abandoned, and in their place have been hoisted vague warnings that there are still dangers ahead.

Fact is that the storm seems to be fairly well weathered. The dangers ahead are largely anticipated because the economy is operating at a peak, and the alarmists feel that trade can now only adjust down.

The current trend does not, however, look to any such adjustment. With basic material costs still pressuring prices up, the value of accumulated inventory tends to be supported and even increased, rather than depreciated.

Wage agreement in coal, with its inevitable reflection in steel prices, has toned down the speculation that inventory values would drop. During the past several months, the rate of inventory accumulation has tapered off. Instead of being able to live off inventories during a so-called breathing spell, it has been found that in many cases inventories have been too low to sustain current sales volume.

FULL EMPLOYMENT IS UNDERLYING FACTOR . . .

Bolstering the current high level of prices, sales and values is the all-time record in employment. A body of 60 million wage earners, working at top level wages, creates a demand for all types of goods and services.

Those who saw a recession in the offing based their opinions to a considerable extent on the fact that buyers were drawing heavily on their savings. When these were dissipated, the demand would drop off and a downward spiral would result.

Instead, the expenditure of savings and of the industrial modernization and improvement reserves created a volume of demand that made for full employment. The current volume of consumer demand rests more on current wage payments than it did a year ago. It is generally believed that employment will remain high.

EUROPEAN AID PROGRAM DUE FOR 1948 LAUNCHING . . .

Example of a phony crisis was that which was built up to gain support of the Full Employment Act. Early last year, it was made to appear that the whole future hinged on the enactment of this law. When it finally was approved by Congress, it was some time before the membership of the economic council was chosen.

The crisis this coming winter is likely to be more real.

One of the important factors which has sustained the present high level of demand in capital goods has been foreign orders. Manufacturers of industrial equipment report that in some instances, 20% of their backlog of orders is made up of foreign orders.

During the past year and for the present, this large foreign demand was financed through direct loans. The loans will have been largely spent by the end of this year, and to continue foreign demand will require some other expedient. Step most generally favored is the Marshall Plan.

Recipients of our aid are required to draw up a bill of materials which they require for their current needs and for reconstruction, and at the same time draw up a bill of their physical assets which can be interchanged among European countries or drawn on by U. S. purchases.

LATIN AMERICAN MARKETS DE-EMPHASIZED . . .

In turning to Europe again as a prime factor in trade, there has been a corresponding de-emphasis on the Latin American market.

The Latin American countries accumulated large dollar exchange reserves, but have committed a good portion of these, and now have adopted a much more cautious attitude in placing purchases.

In assessing the relative value of bolstering up Latin American markets as against rebuilding Europe, the European trade is considered a much more desirable market, in that the demands of the Europeans fit more nearly into a productive pattern.

LABOR-MANAGEMENT ADJUSTMENTS HOPEFUL . . .

Most troublesome fly in the economic ointment has been the problem of assuring a steady supply of materials in the face of constant threats of work stoppage.

Observers feel now that there is a considerable period of labor-management peace ahead, when strikes will be less likely to shut down entire basic industries.

The Taft-Hartley Labor Law is likely to achieve the objective of making management and labor less inclined to seek Government interference and intervention in their relations.

One of the basic considerations in the recent coal wage settlement dispute was the need for attracting a continual supply of coal mine labor to the pits. While mines have been mechanized and working conditions improved, mining is still regarded as hazardous and unpleasant.

To compensate for these obvious disadvantages, it is considered necessary to make the wage return attractive, and to improve working conditions. It is reported that these considerations played a more important part in the negotiations of the new coal contract than is generally realized.

ORDER BACKLOG ESTIMATES FIRM . . .

Estimates of huge order backlogs during the reconversion period were considered faulty, due to the then prevailing practice of duplicating orders as a means of protecting delivery.

Reports of current demand in basic commodities and industrial equipment are less spectacular, but show a strong demand. Further, the backlogs are firm, with no duplication of orders reported.

Five Times as Many at $\frac{1}{10}$ of the Cost!

**Read how banana shipper
increased his production of
containers 500%—and did
it at $\frac{1}{10}$ of former costs
with Acme Silverstitcher**

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The manager wondered if the job couldn't be made easier—faster. He asked an Acme Shipping Specialist for suggestions. Here are the results:

Less Work, Done Faster at Lower Cost

After installation of an Acme 12" Straight Arm Silverstitcher, the same operator was able to stitch *five times as many* tops and bottoms in the same period of time. The work was much easier and less exacting... and the management cut costs 90%!

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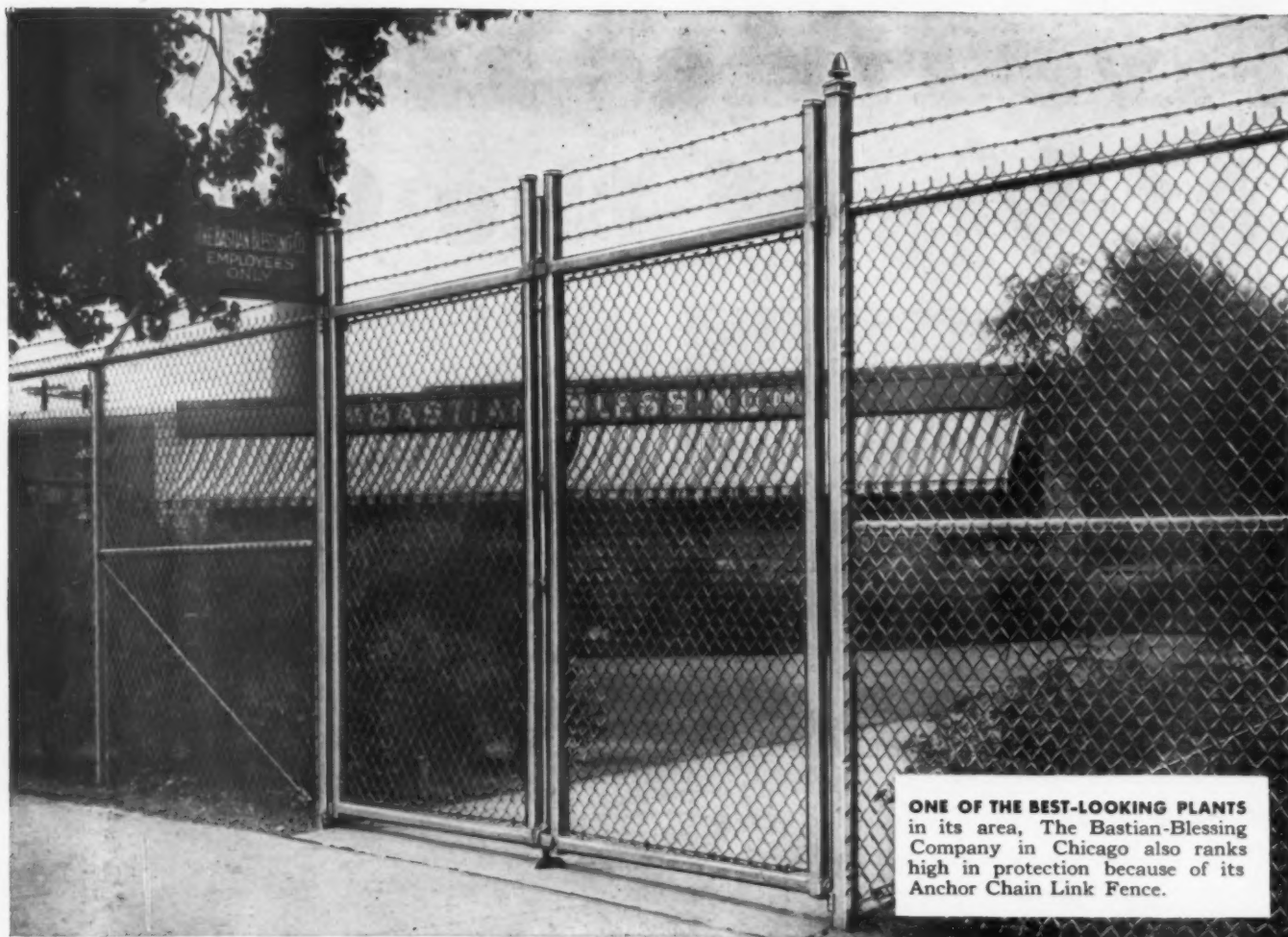
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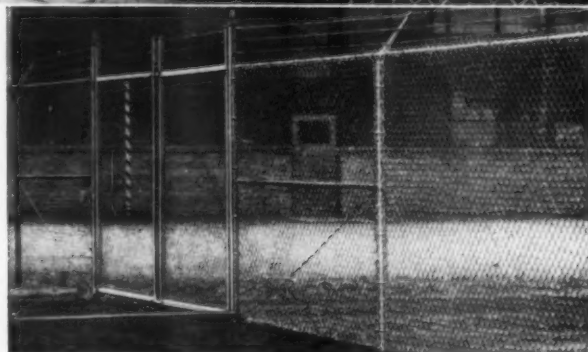
Just check the exclusive features shown in these photographs of the Anchor installation at The Bastian-Blessing Company's Chicago plant. You can get the same advantages

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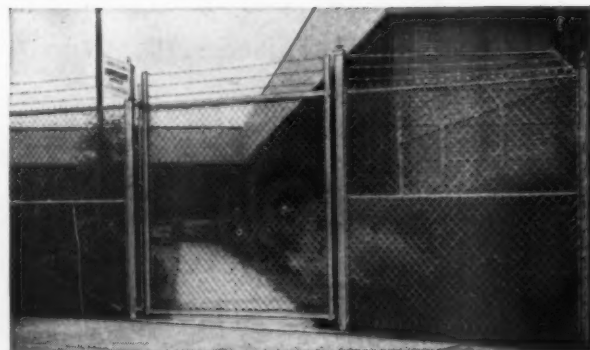


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HELD ERECT AND IN LINE by exclusive *Deep-Driven Anchors*, buried deep in the sub-soil, this Anchor Fence gives maximum protection regardless of soil or weather conditions. And Anchor Fence *U-Bar Line Posts* are self-draining, rust-free and rigid.



FREEDOM FROM WARPING AND SAGGING is the big advantage of Anchor *Square Frame Gates*, shown in this Bastian-Blessing photo. And the *Square Terminal Posts* provide greater strength than round posts of the same size.

CARRIES A LOT OF WEIGHT



This beautiful new Wear-Ever Aluminum Chair is made **STRONG** to withstand hard usage. Loaded with a 200 lb. weight, rocked back, then dropped forward $4\frac{1}{2}$ " mechanically 100,000 times, the chair did not loosen or change its dimensions. It's self-leveling—won't wobble on uneven floors. It's constructed of high yield strength, extruded Aluminum alloy.

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FOR

*non-ferrous
experts,
that is...*

Try your hand at
melting down these
foundry posers...

1. In running a heat of aluminum the proper time to stir the metal is:

- (a) When it has just melted
- (b) When it is up to temperature
- (c) When transferred to the ladle
- (d) Just before pouring

2.



If .0001% by weight of hydrogen separates from molten copper at 1981° F., the volume of gas formed will be equal to what percentage of the copper volume?

- (a) .01% (c) .62%
- (b) 44% (d) 13.7%

3. What factor is the key to controlling gas porosity in copper-base castings?

- (a) Hydrogen content
- (b) Furnace temperature
- (c) Oxygen content
- (d) Pouring temperature



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AMERICAN SMELTING AND REFINING COMPANY

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If you want additional copies of this quiz, or useful literature about non-ferrous casting alloys, use the coupon at right.



N-E-MEN

Only!

4. Which of the following aluminum casting alloys has the greatest fluidity and will, therefore, be most satisfactory for detailed castings?

- (a) F480 (4% Cu, 8% Si, no Mg)
- (b) F250 (2% Cu, 5% Si, no Mg)
- (c) F430 (4% Cu, 3% Si, no Mg)
- (d) F410 (4% Cu, 1% Si, no Mg)

HOW'RE YOU DOIN' SO FAR?



5. Which of the following gases is most likely to cause gas absorption when melting non-ferrous alloys?

- (a) Water vapor
- (b) Carbon monoxide
- (c) Carbon dioxide
- (d) Molecular hydrogen

6. If the only specification for a casting is that it must hold 1000 pounds cold water pressure, which of the following alloys can be used?

- (a) Yellow brass
- (c) G Metal
- (b) 85-5-5
- (d) 88-10-2

7. If a manganese bronze test bar of the 70000 T.S./30% E. variety proves to have a high elongation and a low tensile, what is the usual reason?

- (a) Copper too high
- (b) Zinc too high
- (c) Poured too cold
- (d) Poured too hot.

8. What is the most probable source of gas porosity in castings?

- (a) High pouring temperature
- (b) Improper gating
- (c) Improper melting practice
- (d) Wet sand

9. When casting copper, the presence in the melt of .02% phosphorus will result in a conductivity of:

- (a) 99%
- (c) 95%
- (b) 98%
- (d) 90%



10. Which of the following alloys shows highest solidification shrinkage, that is, the particular contraction which occurs when metal changes from liquid to solid?

- (a) Aluminum bronze
- (b) Copper
- (c) 80-10-10
- (d) Manganese bronze

"DOC TILLITY" says:



HERE ARE THE ANSWERS

HOW TO RATE YOUR SCORE

How'd you make out? If you rang the bell for 8 or more out of 10 you deserve a bigger pay check. With 6 or 7 correct you should be in line for at least a month's vacation in Florida this winter.

Anything less than 6 right puts you in the "somebody ought to be done" class. Try reading some of Federated's helpful literature. And if your non-ferrous problems are really tough, a friendly Federated serviceman will be glad to help you. Call or write any of Federated's 11 plants or 25 sales offices from coast to coast or Federated Metals Division, American Smelting and Refining Company, 120 Broadway, New York 5, New York.

FEDERATED METALS DIVISION, Dept. P
American Smelting and Refining Company
120 Broadway, New York 5, New York

Please send me the items I have checked:

- ☐ Non-Ferrous Metals and Alloys booklet
- ☐ Aluminum Casting Alloys booklet
- ☐ Test bars booklet
- ☐ Reprints of technical articles
- ☐ Reprints of this quiz

Your Name _____

Company Name _____

Address _____

City _____ Zone _____ State _____

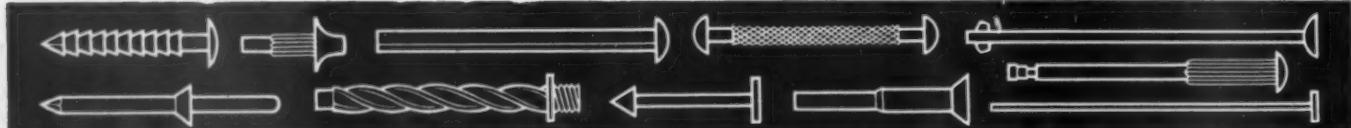
1. Avoid stirring altogether; it will create dross that remains in the metal and produces dirty castings. • 2. (b) 44%.
3. (c) Oxygen content. • 4. (a) F480, because it contains the most silicon, the element which improves fluidity. Notice how the Federated specification number permits easy identification of the alloy's composition. • 5. (e) Water vapor, because it breaks down into atomic hydrogen, which is very soluble. • 6. Any one, providing a properly designed and sound casting is made. • 7. (a) Copper too high.
8. (c) Improper melting practice. • 9. (d) 90%. • 10. (c) 80-10-10.

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D. R. PERCIVAL, Electrical Engineer, Machine Division, Norton Company

He cuts *production* *corners—*



BEN B. BRESLOW, President, Utility Appliance Corp.

"I think many designers will save time in the long run if they will decide, at the start of a job, to use standard motors." Thus speaks D. R. Percival, Electrical Engineer, Machine Division, Norton Company. "We'll eliminate the exhaustive engineering tests we used to make on fractionals. With horsepower, service factor, breakdown torque, and starting current all rated on a clear-cut, uniform basis we'll know *in advance* whether the motor will handle the job."

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fractional-horsepower

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Unit-Bearing Fan



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Oil Burner



Machine Tool



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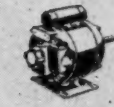
Jet Pump



Shaft-Mounted Fan



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General Purpose

THE NEW MOTOR INDUSTRY STANDARDS for defining motor rating and performance and the new dimension standards for small-power general-purpose and definite-purpose* motors were not set for the convenience of General Electric—or any other electrical manufacturer. They were arrived at after careful study of thousands of motor orders and months of co-operative work by industry associations and the National Electrical Manufacturers' Association. They represent the best possible co-ordination of motor design with the current needs of small-power motor users. And—these standards will be modified as design trends change, to keep in step with user needs. Standardization is not static!

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*Definite-purpose motors are standard motors specifically designed for jobs where general purpose motors (built for broad application) are not ideally suited

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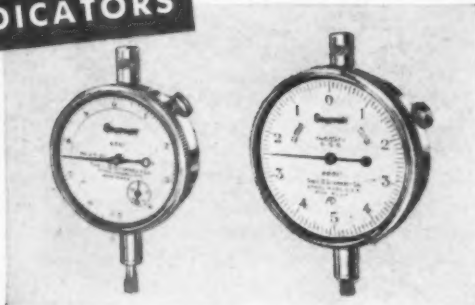
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What's the score on HAND-TO-MOUTH BUYING?

The prevalence of hand-to-mouth buying policies in today's market is a matter of major importance — and of serious concern — to both purchasing and marketing executives. It is one of the significant factors shaping the present course of our national economy. PURCHASING has queried the men closest to this situation. The actual extent and probable duration of such practice, the costliness and economic implications of hand-to-mouth buying are among the phases of this vital topic that are summarized below, reflecting the experience and judgment of a representative group of purchasing agents in all parts of the country.

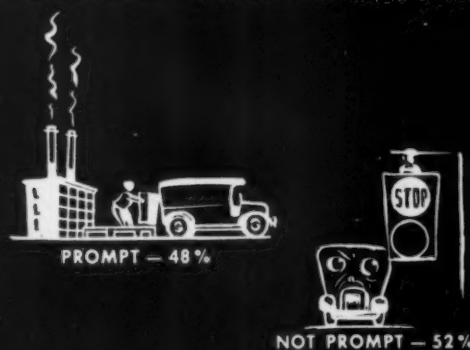
① Are you buying any substantial part of your requirements on a hand-to-mouth basis?



② If "yes", how long do you expect that this policy will prevail?



③ Are deliveries in general prompt and dependable enough to allow the maintenance of steady production with hand-to-mouth buying?



④ Have you encountered any unwillingness on the part of suppliers to maintain stocks for prompt service ?

*A majority of respondents to this question emphasized that it is inability rather than unwillingness on the part of the supplier to maintain stocks at a proper level.



UNWILLING — 35% *



WILLING — 65%

⑤ Does your production department appreciate the necessity of closer cooperation with you in executing a hand-to-mouth purchasing policy ?



DON'T COOPERATE — 8%



COOPERATE — 92%

⑥ Do you find hand-to-mouth buying a more expensive way of purchasing than with greater advance coverage ?



NOT MORE EXPENSIVE — 24%



MORE EXPENSIVE — 76%

⑦ In your opinion, does hand-to-mouth buying promote economic stability — or retard it ?



PROMOTE — 32%



RETARD — 68%

WHAT THEY SAY

"Hand-to-mouth buying does promote economic stability because it has a tendency to eliminate competitive bidding for materials between concerns. However, when a buyers' market returns and materials and prices are more favorable, a return to long-range buying is in order."

"Prices are too high and will probably go higher since the coal 'sell-out' by Big Steel and others. Buyers should squeeze prices all possible under present conditions."

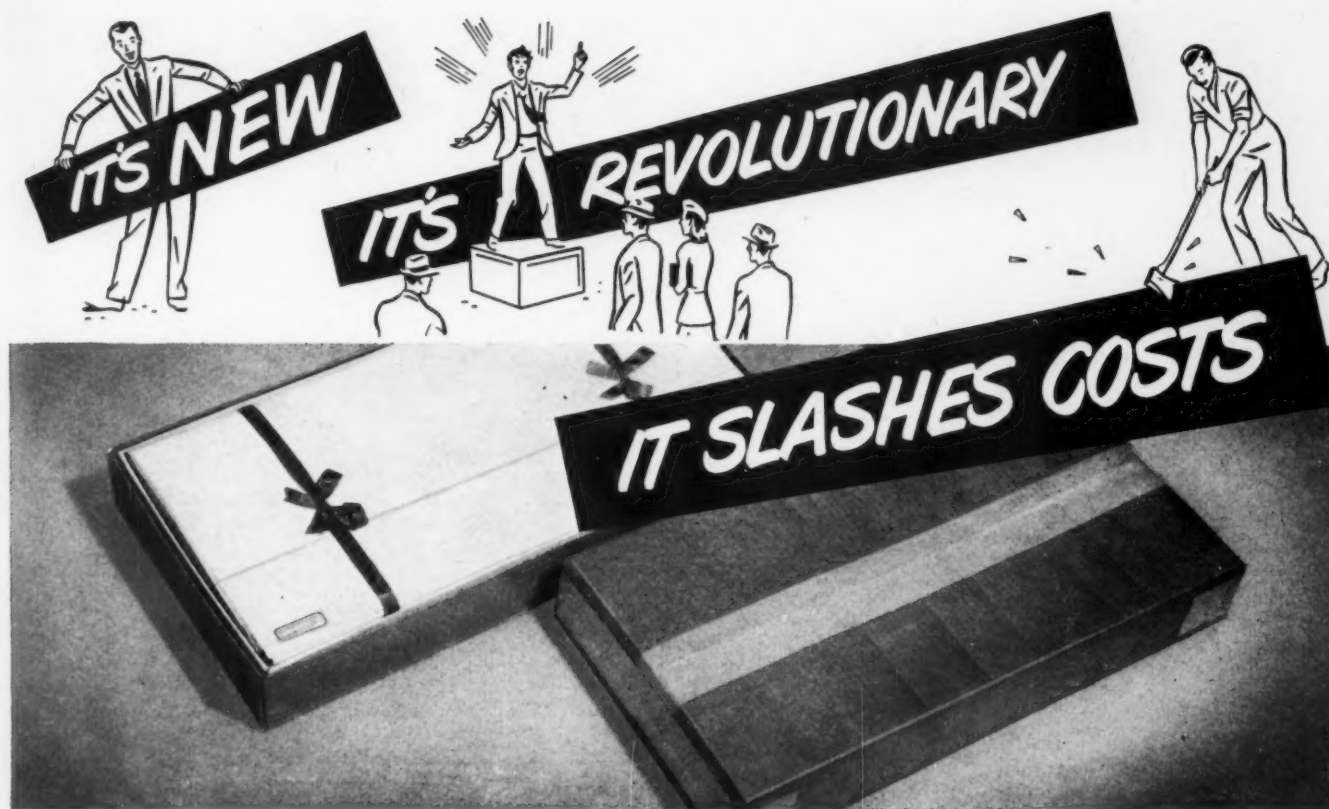
"Under current conditions with prices going up . . . sales managers' allocations are tougher on buyers than Federal regulations during the war. Hand-to-mouth by everyone would soon tell us just what our actual requirements are. A great many sales man-

agers have deliberately accepted too many orders too far ahead."

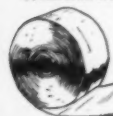
"(Hand-to-mouth buying is) less than 2% more expensive, and indirectly will promote economic stability."

"Economic stability can be reached only by some assurance of a steady demand to maintain steady production. This assurance is lacking when our suppliers are unable to foresee our regular re-occurring needs so that they can anticipate raw material requirements for their production."

"Believe a more careful inspection of back orders and current orders on the more critical items would enable a distribution to necessary use, rather than to a speculator."



Now for the first time, you can buy cushioned shipping containers in continuous rolls. The new Corroflex TUBE-TAINER* has the flexible cushion and sturdy outer covering which are famous for their money-saving advantages. You save in many ways with Corroflex TUBE-TAINER — save time through fewer and simpler packaging operations — save material through a closer-fitting container which eliminates dunnage — save shipping costs, too.



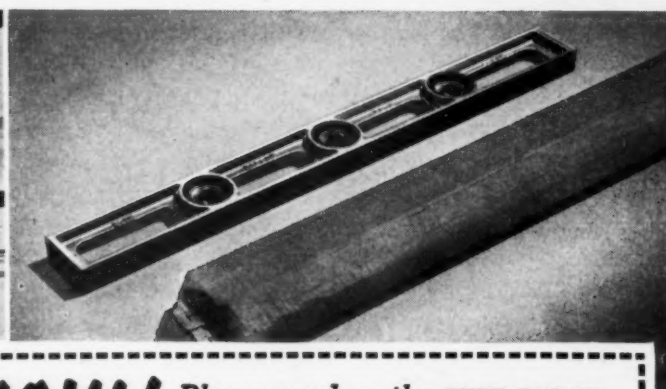
Corroflex TUBE-TAINER

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*Patent applied for in U.S. and foreign countries • T. M. Reg. U.S. Pat. Off.

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PURCHASING

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THE TREND TO DECENTRALIZE

ECONOMISTS see in the present national scene a strong population shift away from the larger metropolitan areas, with their disproportionately high cost of living, to the smaller cities and towns. The movement is gaining momentum and can properly be called a trend.

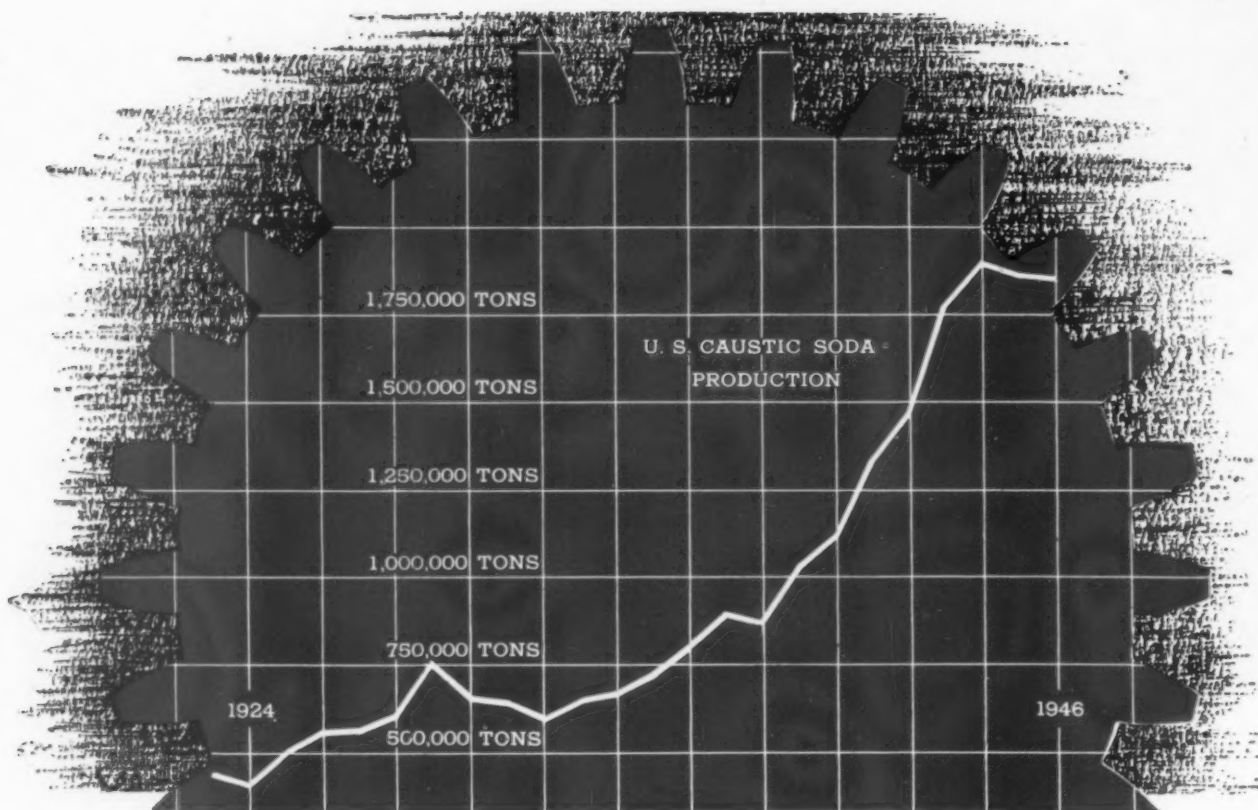
Since this presents the problem of a new distribution of the labor supply, it is natural to find a corresponding trend toward the decentralization of operations in many industries. Plants are being spotted around the country. In a number of leading cases, these plans are not new, but have been blueprinted for years awaiting just such an opportunity for realization. There is considerable reason for looking at the industrial shift as a cause, rather than a result, of the population shift. Decentralization of operations calls for new techniques of administration, and these too are in readiness.

For some time past, superficial business observers have professed to see a trend toward the decentralization of purchasing authority in respect to branch plant operations. Newspaper emphasis on a few "big name" examples, without adequate attention to getting the real details and the perspective, have created the popular—but false—impression that this is also a management trend.

As a matter of fact, almost every publicized example of purchasing decentralization illustrates the technique of delegating routine chores and providing supervision at the point of use while strengthening central control. In one of the most widely cited instances, decentralized buying authority is strictly confined to local purchases of a maintenance nature, representing less than $\frac{1}{2}$ of 1% of the total purchasing program—and in some of the plants it isn't working any too well even on that limited scale. In another recent case, nominal decentralization of branch plant buying resulted—within the first few months after the plan was installed—in doubling the number of items coming under definitely centralized contract control.

Management is not lightly discarding the proved benefits of competent centralized purchasing authority and direction. The techniques are changing, but the trend is still, as it has been for the past thirty years, toward the complete functionalization of procurement in a management department at the executive level.

Stuart F. Henrity

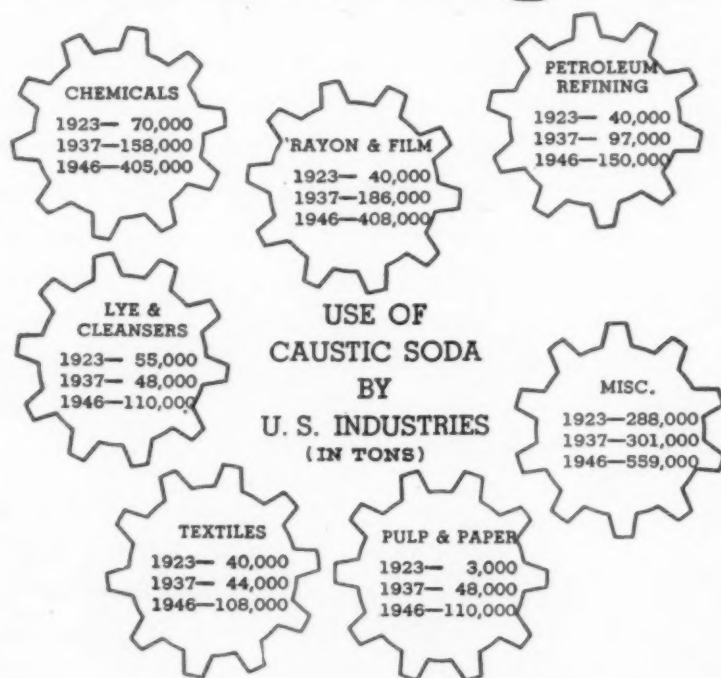


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The huge increases in volume and the vastly superior quality of American production of Paper, Rayon, Textiles, Chemicals, Soap, Petroleum and numerous other essentials are reflected in the records of alkali manufacture. Caustic Soda, for example, is identified with basic processes in all of these industries. Its production figures are indicative of the close ratio to those of leading American industries.

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HIGHLIGHTS

A brief summary of outstanding features
of timely interest and importance in this
issue, to conserve the time of busy readers



The far-reaching economic implications of an industrial purchasing program — dependent on all sorts of large and small production facilities throughout the nation and in turn supporting those varied enterprises and the employment and income they represent — is dramatically illustrated in a report of The American Tobacco Company's purchasing department on its expenditure of **40,000,000 Dollars** per year. That report is embodied in a new booklet prepared for distribution to its more than 3,000 suppliers, and is an outstanding example of effective public relations work on behalf of purchasing activities. You'll find the story of this report on page 91.

The second of our monthly surveys of purchasing opinion is tabulated on the editorial insert, page 79. It deals with current practice in regard to **Hand-to-Mouth Buying** — a topic of major importance to everyone who buys or sells. The majority of purchasing men consider it more expensive to do business this way and feel that it does not promote economic stability. Nevertheless, it seems that we shall have this problem to deal with for some months to come. Check your own opinions on this topic with the findings of the survey.

More and more purchasing men are being called upon to buy materials for **Plant Landscaping** projects. It's not a large item in the total purchasing program, but it has an importance in industrial and community relations outweighing the dollar values by a wide margin. There is more to it, too, than the mere orders for trees, shrubs, seeds and service. Mr. Cady's article on page 96 outlines the basic principles to be considered and shows what some companies have accomplished in this direction.



Decentralization of Purchases has been emphasized in the headlines of late, but the popular conception of this trend is not supported by the facts. The editorial on page 85 examines what is actually happening. And there is an excellent description of a successful **Divisional Purchasing System** on page 116, showing how the principle of centralized control still applies.

This month's guest editorial (page 89) goes to the root of the buying responsibility — **Purchasing for a Profit**. Bill Roemer brings to the subject the fresh viewpoint of a man whose first training was in sales work and whose buying experience was gained in the difficult war years.

Taking a tip from the widely accepted practice of holding periodical sales conferences for the selling staff, an Ohio manufacturer conceived the idea of calling a **Conference of Suppliers** to present and plan and schedule the company's purchasing objectives. The success of his idea in new life and vigor into the purchasing program is reported on page 101.

When the Port of New York Authority took over the responsibility for development, maintenance and operation of the three great **Metropolitan Airports**, it doubled the purchasing responsibility overnight. An interview with Director of Purchases James Clark McGuire, on page 107, shows how the purchasing department has taken the increased responsibility in stride, by working closely with the executive and engineering personnel from the inception of every project, and how he has adapted the technique of visual presentation to the problems of selection and consideration of new equipment items.



Purchasing agents don't make prices, but they have to be sure that prices are right. Applying the lesson of wartime purchasing, as developed in the aircraft procurement program, C. W. S. Parsons outlines the principles of cost analysis in buying, leading to the conclusion that sound purchasing is the most effective means of **Price Control**. Turn to page 103.

First cost is not the measure of value in a purchased item. A West Coast lumber company has found a source of greater value and unforeseen profits by considering the **Second Use Life** of the products it buys. The article on page 124 gives some practical illustrations of this principle as applied to a variety of products.

Informative articles on **Packaging** (page 110), **Safety Equipment** (page 127), and **Lubricants** (page 139) will help you do a better job. And don't overlook the comprehensive data on **Delivery Information** (page 133).

Are you making full use of these monthly departmental features compiled especially to keep you informed on recent industrial developments? A selected list of new **Trade Bulletins and Catalogs** that are yours for the asking (page 14) and the illustrated summary of **New Products & Ideas** now available for the industrial buyer (page 146) will help you to keep up-to-date on these matters.



Manufacturer Flies Ryerson Engineer to Plant . . . and returns him with problem solved

A machinery manufacturer faced an emergency. He was changing over to flame-cut steel plate for many parts previously cast. In the process of change-over, unforeseen production problems threatened to stall his entire operation. Committed to a heavy schedule of deliveries, he saw the threat of reduced volume as an inconvenience to customers—a mark against his company.

Moving swiftly against time, he called Ryerson in a neighboring state, offering to send his company plane if a Ryerson specialist would make a flying trip to his plant. We agreed, and, in a matter of hours, a Ryerson engineer was on the spot giving practical assistance.

By simplifying several parts, engineering difficulties were avoided. Standardization of other parts reduced cost and made better use of available steel. There was no slow-down in production.

As our specialist was flown back that same day, he made out a report covering his activities. It was brief enough. It read: Customer service.

That brief report—customer service—sums up the reason so many steel users make Ryerson the first source for steel from stock and turn to us in time of trouble. Despite steel shortages there is no shortage in our willingness and ability to cooperate. Our technical men will gladly work with you on any steel problem, or assist in the search for a suitable alternate when needed steel is not available.

Remember that Ryerson facilities and experience are always at your service when you call.

JOSEPH T. RYERSON & SON, INC.

Plants: New York, Boston, Philadelphia, Detroit, Cincinnati, Cleveland, Pittsburgh, Buffalo, Chicago, Milwaukee, St. Louis, Los Angeles.

RYERSON STEEL

Purchasing for a Profit

● By W. J. Roemer

I HAVE never had the pleasure of purchasing in a buyers' market. When I came into purchasing work in 1940, after seventeen years in the sales department of my company, the wartime sellers' market was already in full swing. Materials were hard to find, and slow to get into the plant. The major economies in purchasing were not to be found in the market, but had to be sought in company policies and procedures. Chief among these policies was a full measure of cooperation between purchasing and the engineering and manufacturing departments to achieve a coordinated materials program.

They tell us that a buyers' market is just around the corner. Does that mean three months, six months, or more? Who knows? But of one thing we may be sure. When the purchasing agent does eventually enjoy a buyers' market, his company will be marketing its own products under those same intensely competitive conditions, and for profitable operation under these circumstances it will be more than ever necessary to put those internal policies of cooperation into practice and to realize the potential economies.

Purchasing has been described as the first step in production. Actually, it goes back even farther than that. To do a really first-rate purchasing job, and to make the maximum contribution to profitable company operation, it must start in the planning stage, from the very inception of a

W. J. ("Bill") Roemer is Purchasing Agent of the Bristol Company, Waterbury, Conn., manufacturers of precision and recording instruments. Youthful veteran of nearly a quarter-century of service with his company in various capacities, his approach to the procurement function is from the broad viewpoint of over-all company interest. Salesman turned buyer, he has never forgotten his early business training, and is one of the leading exponents of salesmanship in and for purchasing, whether dealing with vendors, company associates, or with the business community at large. Relative newcomer in purchasing work, he has been quick to master the fundamentals of the art but is untrammelled by its traditions. Tireless reader and student on all business subjects, he has more original ideas per minute than most of the "authorities" and has the energy and initiative to put them into practice. Keen and objective analyst, thorough organizer, he recognizes the importance of the human side of purchasing, and his dealings are stamped with the impress of his own frank and friendly personality. Enthusiast for his profession, he is an active worker in the Connecticut State Purchasing Agents Association, became its President in 1946, and is currently serving as National Director. Clear thinker and able speaker, he is frequently called upon when sales and advertising groups want to know what Mr. Purchasing Agent is thinking.



product and in the setting of a manufacturing schedule. It is impossible for the buyer to purchase for a profit unless he has the opportunity to study the proposed methods, materials and applications, along with his company's engineers, designers and production men, and unless he is fully informed of the quantities involved and when the materials will be needed.

A couple of examples will demonstrate this more clearly than any amount of theoretical discussion. Such examples can be found among the simple "bread-and-butter" requirements that arise every day in every purchasing program.

Preliminary Studies

For example, a need may develop for a rubber grommet of a particular design. The purchasing agent is called in on this problem by the development engineer, and the subject is carefully considered from every angle. The first question raised by the purchasing agent is whether the design is such that it can be adapted to a standard mold listed by some supplier of rubber grommets. If we can buy and use a commercial or standard product rather than requiring a special mold, the factors of cost and delivery would both be improved, and in such procedures lies one of the possibilities of purchasing for a profit.

But suppose this is not practicable; no supplier of rubber grommets has a standard mold that could be used for this particular purpose. The next step is to arrive at an understanding of the necessary specifications, the quantity required, and probable future activity. On the purchasing side there is the responsibility of knowing what suppliers in this field have the facilities for producing the part satisfactorily and would be most interested in the business. From past experience, or a visit to the suppliers' plants, the purchasing department selects three or four likely sources of supply. Meanwhile, a half dozen samples of the desired shape are made up from the development engineer's sketches so that the latter can prove the actual value of the part. On the basis of this exploration of sources we are qualified to pick the supplier that gives us the best proposition when quotations are received.

Developing a Source

Prompted by a requisition from the development engineer, an order is placed for a temporary mold. Six samples are submitted, which are

duly tested and found satisfactory. Now it is time to write the purchase specifications — a job undertaken jointly by development, purchasing, and production engineering.

All of this has been preliminary to the actual purchase, and the foundation for profitable purchasing is not yet fully completed. A requisition is written to satisfy the need, for a mold and 2,000 grommets. After a further discussion as to quantities required and yearly usage, the purchasing agent consults the supplier. In order to satisfy our production requirements and to buy in economical quantities, a mold must be purchased with the proper number of cavities. This may be 16, 25, 64, or 81. The greater the number of cavities in the mold, the lower will be the piece price per grommet — and the higher the cost of the mold.

After a study of the price breakdown, yearly usage, mold cost, and piece price for the various size molds, with the cooperation of engineering and production, the purchasing agent is in a position to place the purchase order at the right price, for the right quantity, and with the right supplier. And if this project has been properly planned and scheduled, the material will be delivered on time.

Quantity Advantages

How about a standard product, where no such complications of design and mold equipment are involved? For example, here comes a requisition for 50 pounds of a certain size brass rod. We don't happen to carry that particular size in stock. Quite possibly, the requirement might have been anticipated some days or weeks earlier, but perhaps on the assumption that it can be procured at any time, or perhaps because of unfamiliarity with the sizes that are regularly stocked, the requisition is not written until the operating department is ready for the material.

What the operating department may not know is that buying brass rod in small quantities entails a very high price differential. The purchasing agent knows that he can combine various sizes in order to arrive at a quantity that entitles him to a base price. On brass rod, that quantity happens to be 2,000 pounds. To purchase for a profit, it is his policy never to buy in quantities of less than 2,000 pounds. If he places an order for the 50 pound lot, it means an additional cost in the neighborhood of 15 cents a pound.

In the instance cited, there are several courses of action open to him. If the item is urgently needed at once, he can buy it at the premium price. Or he may hold the requisition for a few days and ask production to include some other items to bring up the quantity. Best of all, he might have prepared for this situation by a policy of close cooperation that would have apprised him of this need at the earliest possible time, so that it could have been included in the previous order. If total requirements of 15 or 20 tons a year are bought at the base price rather than in small lots as specific requisitions are received, a very nice saving is made. That saving is available to the company's profit account, even though the detailed amount does not appear as a specific item on the ledger.

Lead Time Factor

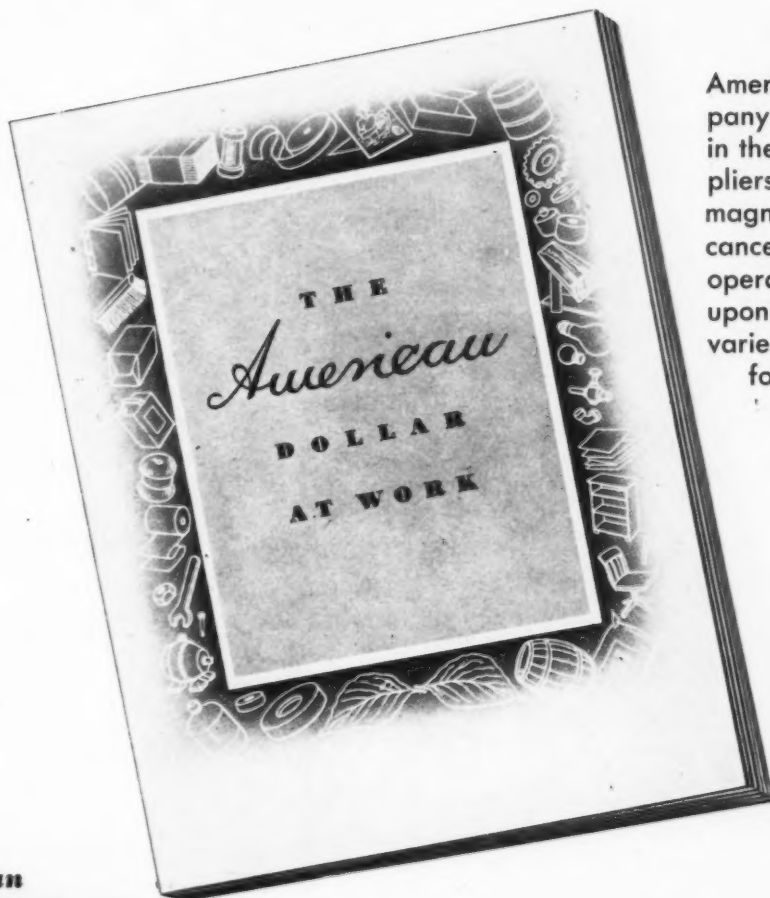
There is one more important point about purchasing that every production department should comprehend and appreciate if it is brought to their attention. It takes time for our company to manufacture its own products, even after we have the necessary material. Our suppliers have the same time factor to consider in their operations. They have similar problems and troubles in their plants in respect to procurement. Therefore the purchasing agent must be reasonable in his demands and tactful in expediting.

A generalization such as "one month's lead time on every requirement" fails to meet this situation. The purchasing agent cannot procure material in one month if the supplier takes four months on that item. As a guide to production and planning, our purchasing department is furnishing a monthly delivery forecast on some 300 items on our purchasing list, that is, the time it takes to get delivery after an order is placed. To this should be added the time necessary for preliminary research and negotiation.

The cost of purchased materials, parts, and supplies represents an important sector of the manufacturer's product cost—frequently amounting to from 25% to 50% or even more. Here is a vital opportunity for savings that can be translated into company profits. Every alert purchasing agent seeks to purchase for a profit. But he cannot accomplish this alone. It can be accomplished by wholehearted cooperation with other departments in studying, planning, scheduling, and programming requirements well in advance of actual needs.

40,000,000 PURCHASE DOLLARS

... AND WHAT THEY MEAN TO AMERICAN INDUSTRY



American Tobacco Company booklet, published in the interest of its suppliers, describes the magnitude and significance of purchasing operations that draw upon the resources of varied industries in all forty-eight States

• Richard J. Boylan



A POLICY of reporting to suppliers, as an expression of appreciation for their cooperation and as a means of dramatizing the extent and significance of the purchasing program, is an integral part of the business philosophy of Richard J. Boylan, Vice President and Director of Purchases of the American Tobacco Company, New York City. His booklet "Sold American", published in 1940, still ranks high as an example of effective public relations work for the purchasing department. At that time there were 2,300

separate business enterprises in the "family" of suppliers contributing to American's purchasing program and recognized by Mr. Boylan as co-workers in making possible the operation of his own organization; the annual expenditures of the purchasing department amounted to 18 million dollars. Since then, the family has grown to include more than 3,000 supplier companies, sharing 40 million dollars worth of business. A new report has been prepared entitled "The American Dollar at Work".

[illegible]

The report is in the form of an attractive 20-page booklet, 8½ x 11 inches in size, well designed and illustrated, and printed in color. Five of the pages are devoted to a condensed listing of the suppliers to whom the booklet is addressed, set against a tint background, and graphically indicating the scope of this purchasing program. The list reads like a Blue Book of American Industry. PURCHASING is proud to be included in this list of essential vendors. On the concluding page of the listing, Mr. Boylan has inserted a card: "To our suppliers we say: 'Well Done'"

Suppliers Are Important

The gist of the message is embodied in a letter addressed to these companies, as follows:

"To Our Suppliers:

"There are over 3,000 of you. To you we are grateful for your ingenuity, cooperation, and good will during these past few trying years. You helped us over many a rough spot despite material shortages, labor difficulties, severe allocations and our own increasing production.

"During the last five years the sales of Lucky Strike Cigarettes and our other tobacco products more than doubled. This is due in no small measure to the dependable sources of supply and services which you furnished.

"During this same time, the amount of money spent by the Purchasing Department also increased. These additional dollars meant more work and more profits for you—our suppliers. This should always be so, if we both bear in mind our cardinal principle, 'Quality of Product is Essential to Continuing Success.'

"In a year, we placed 17,398 purchase orders with you, totaling over \$40,000,000. You will find on the following pages some examples of our \$40,000,000 at work. They buy the endless stream of commodities and materials, other than leaf tobacco, necessary to manufacture and sell our tobacco products. These \$40,000,000, together with the dollars spent by companies such as yours, make possible a continuation of our American way of life.

"I hope, too, these \$40,000,000 serve as an incentive to spur on our regular suppliers to greater efforts and as an invitation to potential suppliers to produce the quality, reliability and service necessary for our many needs."

This theme of the economic significance of purchases is emphasized throughout the booklet. It shows

SELECTED LIST OF COMMODITIES BOUGHT BY THE AMERICAN TOBACCO COMPANY

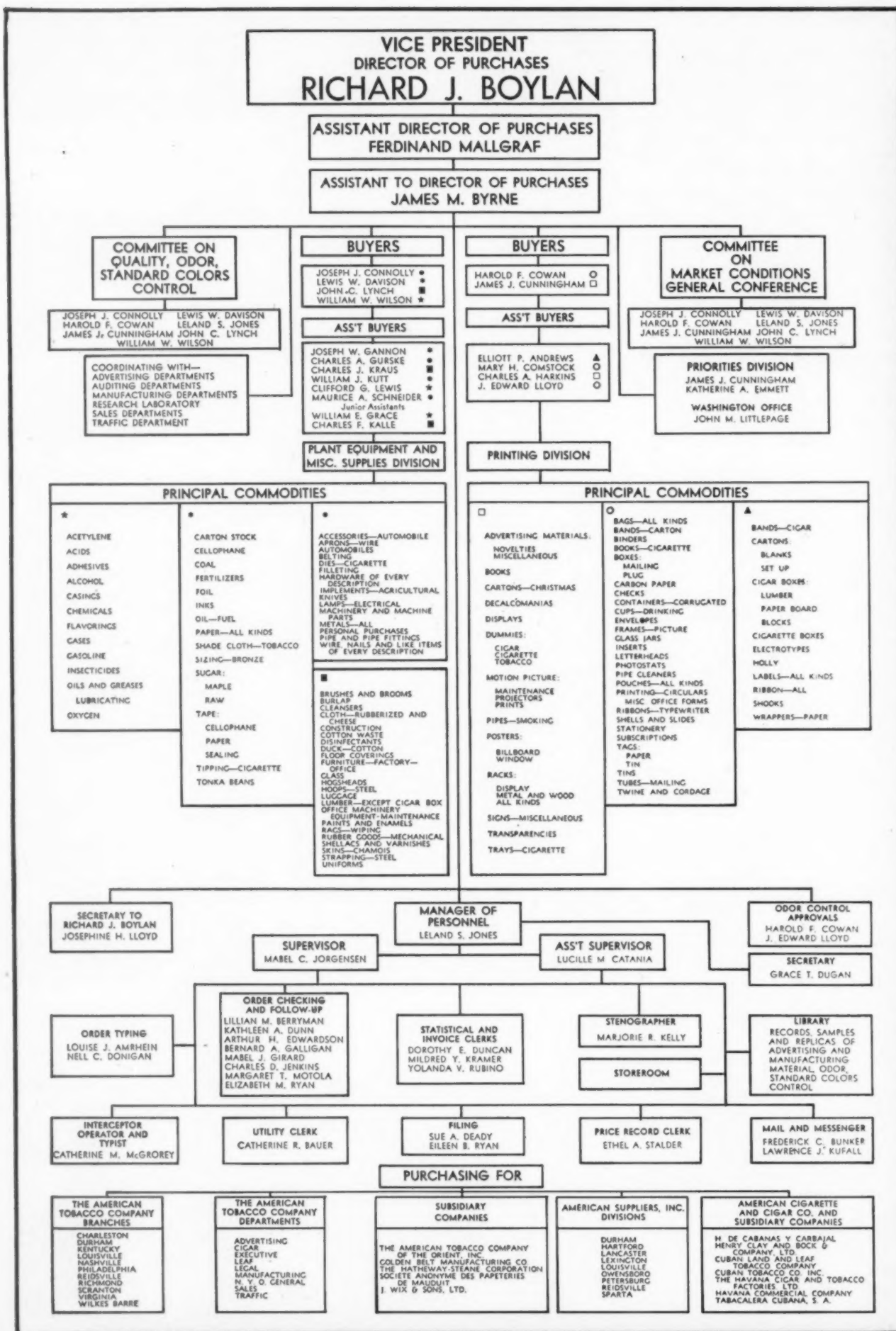
Accessories	Cigarette Paper	Glass	Pipe & Fittings
Automobile	Cleansers	Hardware	Posters, Window
Adhesives	Cloth	Hogsheads	Pouches
Advertising Material	Cheese	Hoops, Steel	Printing
Advertising Novelties	Rubberized Shade	Implements Agricultural	Racks, Display
Aprons, Wire	Coal	Inks	Ribbon
Automobiles	Construction Materials	Knives	Rubber Goods Mechanical
Bags	Containers	Labels	Shellac & Varnish
Bands, Cigar	Cordage & Twine	Lamps	Shells & Slides
Belling	Cotton	Lumber	Signs, Misc.
Binders	Displays	Lumber Cigar Box	Sizing
Books	Electrotypes	Machinery	Stationery
Books Cigarette Papers	Equipment & Supplies	Machine Parts	Steel
Box Board	Electrical	Metals	Sugar
Boxes	Factory	Moving Picture	Tags
Cigar	Hospital	Film	Paper
Cigarette	Laboratory	Machines	Tin
Mailing	Machine Shop	Nails & Wire	Tape, Sealing
Plug	Office	Oils	Tins
	Plumbing	Fuel	Tipping Cigarette
Brooms & Brushes	Filleting	Lubricating	Trays
Cartons	Flavoring Materials	Paints & Enamels	Uniforms
Cases, Wire Bound	Foil	Paper	
Cellophane	Furniture		
Chemicals	Factory Office		
	Gasoline		

how the purchase dollars filter down, directly and indirectly, into practically every kind of industrial activity, finding their way into every State of the Union and into many foreign countries. The impressive dollar total includes orders for such small items as rubber stamps, costing only a few cents, as well as the orders running into six and seven figures. "Our production would soon suffer if the cigar box nails, gears, bushings, steel and lumber were not received on time and per specification. Brooms, pencils, lub-

rication, inks, fuel, stationery and cigarette knives—to mention just a few items—all have their place in the factory and in the office. One is just as indispensable as the other."

A pictorial map illustrating the great diversity of products procured from every section of the country, and a selected list of representative commodities chosen from among the 1,100 different items purchased, drive home this point. And the economic significance of this interdependence is not overlooked.

"There are many companies like



Aids to Vendors

Another opportunity and challenge to supplier organizations is presented in connection with the research program. The company takes pardonable pride in its Research Laboratory, splendidly equipped for constant and rigorous testing of cigarette paper, foil, bags, cellophane, adhesives, cartons, labels, inks, and a variety of other items in safeguarding the quality of its own products. And it points out that this list of materials is constantly subject to change "as your ingenuity and resourcefulness, coupled with our own research and experience, develop better products for our needs."

principal commodities coming under the jurisdiction of each of the buyers. In addition to the executive heads of the department, there are six buyers and twelve assistant buyers, handling seven major commodity groups. During the past year, members of the Purchasing Department traveled 62,317 miles outside the Metropolitan New York area, expediting deliveries and checking the quality of supplies.

and 45 tons of ink and varnish were used in printing them; that the carton blanks for Luckies alone would make a strip 43 feet wide extending from New York City to Los Angeles, and the labels, end to end, would encircle the earth with a 6 foot belt at the equator.

Such statistics are impressive. The supplier and his salesman, however, are likely to be more impressed with a brief excerpt from the Purchasing Department Manual of Procedure and Policy, that appears opposite the title page:

"Politeness and fair practice should be the foreword in dealing with the suppliers. Remember, courtesy is a builder of good will. Everyone that you come in contact with is a potential consumer. Consequently he should be given every consideration. . . . *Buy only quality.*"





Full-blooming pink roses and attractive green shrubs line the road leading to the north entrance of Armco's East Works plant in Middletown, Ohio. This photograph was taken at midnight on infra-red film.

PURCHASING AN INDUSTRIAL LANDSCAPE

The increasing interest in attractive and well kept factory surroundings raises new problems of procurement and maintenance

• **By E. L. Cady**

PURCHASING-WISE, the flower beds, trees, shrubs and lawns which grace the grounds of factories, railroad stations, offices and other buildings, must be treated just like any other industrial equipment. The factors of suitability to the purpose, lowest possible maintenance costs, and minimum first or investment costs, must govern.

The subject is of growing importance. (No pun intended.) In a survey regarding the importance of in-

dustrial-community relations, conducted by the American Association of Nurserymen, the landscaping of the grounds ranked right along with participation in civic activities, practices regarding visitors, and good housekeeping in plants and offices, in its importance as a factor of company policy on public relations. The respondents to this survey placed those three points well ahead of such matters as contributions to fund drives and local advertising and

promotion. And although the effect of good groundskeeping upon labor relations was purposely omitted from the questionnaire, a large number of respondents wrote this factor in as one of the most important considerations.

Interviews with management men, as well as observations of industrial buildings in all parts of the country, confirm the fact that where the grounds are available more and more companies are paying careful

attention to landscaping, and where such programs have been instituted they are largely being extended. Groundskeeping, then, will increase its demands as a practical purchasing function.

Who Makes the Original Selections

The sizes and shapes of plots of ground available for planting, the purposes of the landscaping, and the climate and soil conditions, vary widely. Some companies have dozens or even hundreds of branch factories, service stations, retail outlets, and other buildings to consider; others have only one.

taining the grounds, or he may be the president of the company, or may hold any other rank. Landscaping is best done by men who enjoy it.

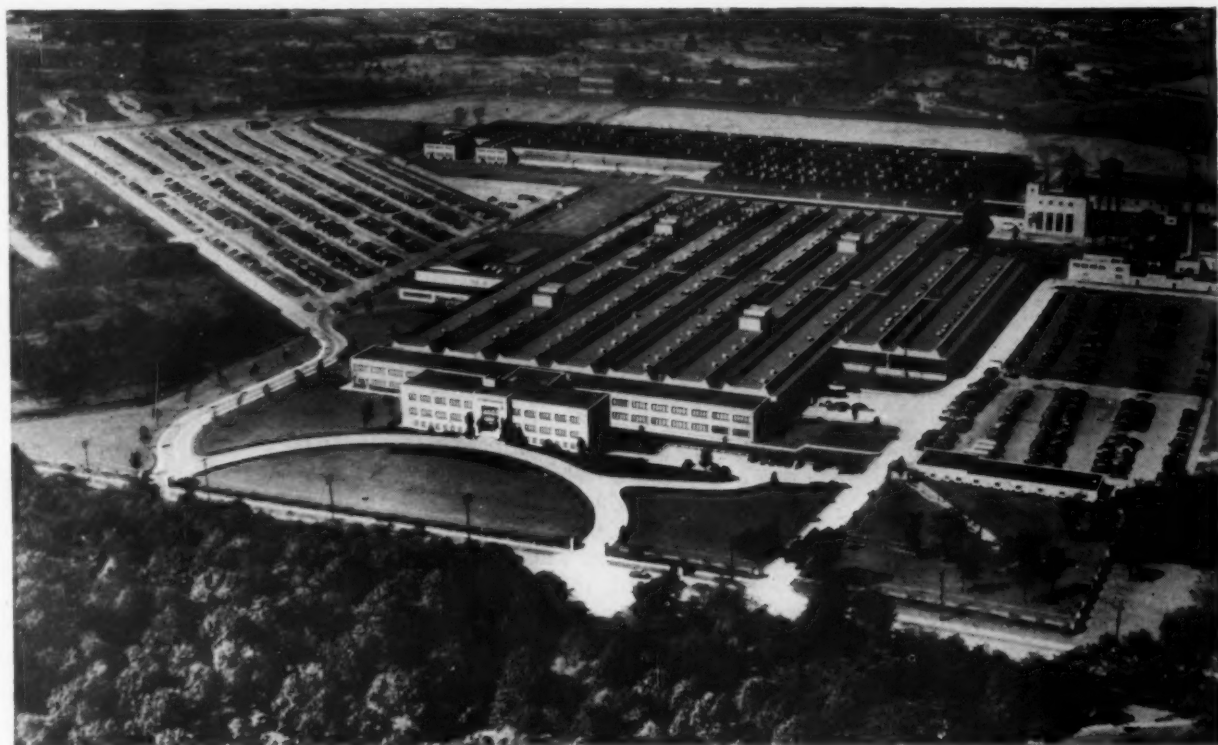
New buildings commonly are landscaped by the architects. Trees and other plants indicated on the plans of these professionals then may be selected. In some purchasing contracts a real engineering job is done, the supplying nurseryman being required to specify the size, shape, and rate of annual growth of every shrub or other important plant which he supplies.

Professional nurserymen often are called in to bid on the planting and

beautification plans sometimes exist, and the industrial landscaping should be in harmony with them. Louisville, Kentucky, is one of the cities which awards annual prizes for industrial beautification. Since community welfare is one of the primary objectives of factory landscaping, the management should comply with whatever community spirit exists when making its original selections of growing things.

Planning For Low Maintenance

Where other considerations do not prevent, shrubs are the most generally preferred plants because of



Wide lawns, modern landscaping, and curved driveways form a park-like setting for the Tapco Plant of Thompson Products, Inc., in Euclid, Ohio. Its 120-acre site, just twelve miles east of Cleveland's Public Square, is one of the industrial show places of the middle west.

Depending upon these matters, the original selection of varieties to plant may be made by an individual, a committee, or an outside counselor.

For factories having only one building or a closely knit group of buildings to be landscaped, an employee who is considered to be a skilled amateur horticulturalist usually does the original selecting. He may be a veteran employee who will be paid on a pension basis for main-

tenance on a competitive basis. If there is an architect's or other plan for landscaping, then the nurserymen bid in accordance with it. But in many instances the nurserymen are requested to make schematic suggestions, each bidder to quote a contract price on the carrying out of his own ideas.

Local garden clubs sometimes enter the picture, the idea being to fit the factory landscaping in with that of nearby residences. Community

their low maintenance costs. Once properly selected and planted, they require very little care.

Evergreens are selected for the same reason and are very close to shrubs in the frequency with which they are used. Shade trees also are extremely low in maintenance costs and therefore are widely used, but are generally applicable only where there is enough ground so they have room to grow without cutting off light from the factory windows and



Shade trees and a broad expanse of grass feature the planting scheme at the West Hartford, Conn., plant of Pratt & Whitney.

without inconveniencing the truck and other traffic on the plant or the public roadways. Hedges of types which require little or no clipping or similar care are used in many instances, especially when they serve to protect lawns against pedestrians.

Factors of Selection

Other plants are selected for reasons peculiar to the managements which use them. About half as many flowering trees as shade trees are planted. Perennials are relatively low in maintenance costs but are only about one-third as popular as shrubs for industrial landscaping. Vines make little demand on the maintenance budget and are employed where they fit the landscaping picture, but many managements feel that they lend too much of an air of antiquity and have too little of the suggestion of modernization which most executives wish their buildings to convey.

Roses and other flowering plants which need the hand of a skilled gardener are used only when the factory is to be a show place, or when they fit some other peculiar need.

A point heavily emphasized by many executives is that the landscaping shall offer no invitation to vandalism by children, by employees or by passers-by. This is one of the reasons for avoiding flowering plants. Community relationships are difficult enough without the emotional tensions which vandalism can

cause. And from the safety standpoint there is no point in leading children to play beside industrial buildings.

Where the shrubs and other plants are not to be maintained by company employees, the annual purchasing contract often specifies that the nurseryman shall perform such functions as spraying, fertilizing and clipping at stated intervals, the details of the contract depending upon the plants selected and upon climate and the length of the growing or "green" season.

If the contract is to cover widely scattered buildings, or in some instances if a pensioned or other employee is to take care of the plants, the annual contract sometimes specifies that the nurseryman is to provide instructions at stated intervals and is to be available for consultation or for occasional supervisory service as required. These stipulations are most commonly found in the contracts of railroads and of companies which operate chains of automobile service stations, but could be adopted with profit by many managements which never have considered them.

Planning For Engineering Purposes

Dust is, of course, never beneficial to any factory or office interior. Proper landscaping can help greatly with the dust problem.

Practical considerations require that the plants shall prevent the

raising of dust on the factory grounds, shall intercept the dust at the prevailing height and from the prevailing wind directions at which it is most likely to be blown, and shall retain the dust which strikes them until either rain or spraying washes it to the ground. Planning must take into account such factors as whether the dust comes in at high levels from surrounding hills or from the exhausts of nearby factories, and whether the community has a high average of prevailing wind direction on the hot and dry days when dust is likely to be at its worst.

Dust Hazards

Data regarding prevailing wind directions may be had from the managers of local airports and from weather bureaus. Unconfirmed personal observation on this point rarely is to be trusted.

Lawns are excellent for preventing the generation of dust on the factory grounds. If kept well sprinkled, and if broken up by groups of shrubs so the wind is split into eddy currents and does not have a clear sweep across them, lawns are excellent absorbers of any dusts which cross them at ground level.

Where the dust comes in at higher levels, trees may be more practical. This is one of the reasons for preferring evergreens. The evergreens have thick foliage for the catching of dust, and retain their foliage

through the fall months during which the dust problems may be at their worst.

Factories which make precision machine products, and which operate precision equipment, or process fine textiles or chemicals or other products to which dusts are highly hazardous, often maintain within their process rooms air pressures which are higher than those on the exteriors of their buildings. The purpose is to make sure that any leakage of air will be outward through such cracks or other openings as might exist in the building walls and that dust will be blown outward rather than entering the factory. But the effectiveness of such "positive pressure" systems is dependent upon the relative pressures of external and internal air. And when the wind blows strongly enough, the force against the exterior of the wall may overcome the internal air pressure and cause dust to enter.

Control of Erosion

For this reason trees often are planted in such positions that they will break the force of the winds. Trees also reduce the heating and air conditioning costs by reducing the wind loads on exterior walls. In some instances, the planting of trees as wind breaks reduces the hazard that sudden gusts of wind will interfere with the functioning of dust and fume exhausts.

Prevention of soil erosion is an-

other engineering reason for landscaping. Of obvious importance to railroads and to other institutions which have problems of protecting embankments against rain erosion, this point also can be profitable for reducing the maintenance of driveways and other properties.

The selecting of plants for the control of erosion depends upon the soil, the climate, and whether the plants are to serve secondary purposes such as attractiveness and dust control. Deep rooted plants which will grow in very poor soil are preferred. Flowering vines which will cover and hold ground other than that which is reinforced by their roots are also being used in many instances.

Information on soil-holding plants suitable for individual conditions may be had from landscape architects, nurserymen, local farm agents, and the U. S. Department of Agriculture.

Perennials of types which will neither die out easily nor tend to spread themselves in a nuisance way to the lands of neighbors are obvious preferences. The plants should not be such as to entice the public to promote erosion by walking on embankments in order to pick flowers.

Landscaping Catches the Eye

In the American Association of Nurserymen questionnaire, respondents were asked to name any industries which had done outstanding

jobs in landscaping. Mentioned prominently in the replies were the Ethyl Corporation Laboratory, Ferndale, Michigan; Pratt & Whitney, Hartford, Conn.; Olds Motor Works, Lansing, Mich.; Merck & Company, Rahway, N. J.; Thompson Products Company, Cleveland, Ohio; General Electric Company, Cleveland, Ohio; Raymond Bag Company, Middletown, Ohio; American Rolling Mill Company, Middletown, Ohio; Jewel Tea Company, Chicago, Ill.; Olsen Rug Company, Chicago, Ill.; Swift & Company, Fort Worth, Texas and Cleveland, Ohio; National Cash Register Company, Dayton, Ohio; Coca Cola Bottling Company, Atlanta, Georgia; International Harvester Company, Louisville, Ky., and Evansville, Ind.; and National Biscuit Company, Denver, Col., and Atlanta, Georgia.

Local Show Places

Anyone who has traveled about industrial districts is almost certain to recall other factories which have done excellent jobs of landscaping. And many of these will be far distant from his home city.

This was characteristic of the comments on the questionnaire. A high percentage of respondents mentioned factories which were a thousand miles or more from their home cities. The memory of well landscaped grounds persists.

Almost every well landscaped

The Fort Worth, Texas, plant of Swift & Company is widely and favorably remembered for the beauty of its setting





Batteries of floodlights, concealed from the view of the passer-by by shrubbery, illuminate the buildings of The National Cash Register Company, in Dayton, Ohio, at night.

factory is a local show place, something to be exhibited to visitors. The advertising and sales value of this is high.

For such show place purposes the grounds must be designed by qualified landscape architects and maintained by skilled men. The purchasing function then is that of buying for any specialized department of the business. Plants, seeds, sprays, machines, fertilizers, supplies are specified by the experts. But wide acceptance lists of brands and suppliers are worked out so that the purchasing department may compare the values offered by vendors. And standard goods widely available on the open markets are preferred.

Industrial and Public Relations

In some industrial companies, buying for landscaping is one of

the few exceptions to a policy of not making personal purchases for employees. These companies plant standard varieties of shrubs and flowers but also experiment with some of the unusual kinds. Reports are made regularly to the employees via the company magazines. Combination orders then are made up so that the employees may buy at the bulk order prices which quite usually are openly offered to the public by the nurserymen. The deals sometimes are cleared through the employee welfare organizations, thus permitting the company to perform a service without becoming involved in the details of formulating the orders and splitting up the shipments.

Behind this procedure is the same reasoning which induces companies to buy safety gloves and other equipment for employees who will

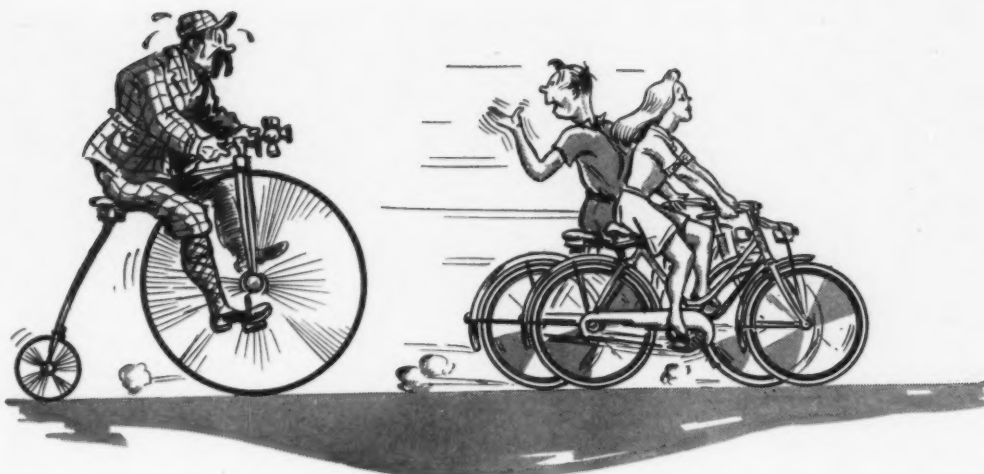
use them at home. Safety habits which are practised at home are likely to be carried into the shop; the planting of flowers at home is likely to instill good housekeeping habits in the factory. A good program of industrial landscaping and groundskeeping is widely reported as promoting respect for safety rules.

Standard Varieties

Companies which buy shrubs and plants extensively for the beautifying of automobile service stations, railroad stations and other institutions which serve the public, sometimes follow a policy of never planting anything other than the standard varieties which the customer would be likely to use in his own garden. The reasons behind this purchasing policy are those of making the customer feel completely at home, not making local salesmen memorize details about unfamiliar plants so they can talk about them, and not leading the customer to waste the time of the salesman in order to discuss the shrubbery.

Industrial landscaping, then, serves engineering purposes as well as those of advertising, community relations and public relations. Its practice, accordingly, is increasing. But its purchasing problems and procedures differ from more common industrial ones only in details.

A comprehensive survey on Manufacturers' Community Relations was made in May 1947 by the American Association of Nurserymen. A limited supply of tabulated reports on this survey is available upon request to Verne Burnett, 522 Fifth Avenue, New York 18, N. Y.



How the technique of the sales conference has been applied to the problem of supply and procurement, with outstanding success

When 81% of total product cost consists of purchased materials, vendor cooperation is the key to profitable business

WE SIGNED UP OUR SUPPLIERS

ON THE PRODUCTION TEAM

● **By Fred C. Smith**

Purchasing Agent
Huffman Manufacturing Company
Dayton, Ohio



SLIP into our shoes—the ones we wore in 1945 shortly after the war was over—and tell us how you would react to a tight pair. Better still, let me tell you what we actually did to ease the pinch and prevent a conglomeration of production corns, bunions and blisters.

First, we narrowed everything down to one vital factor: that without adequate sources of supply we could not market our product on a

national basis, nor survive for any length of time under post-war competitive conditions.

With the acceleration in production we planned, retaining and obtaining suppliers posed a serious—almost disastrous—problem.

It all goes back to 1934, when the Huffman Manufacturing Company, under that name, started to build bicycles. The name was not a new one in the industry, for the first Huffman-Dayton bicycle was put out way back in the Gay '90s, during the days of big front wheels and tandems, by George P. Huffman, then head of the old Davis Sewing Machine Company, and grandfather of the present Huffman president.

Supplies were plentiful in 1934. In those days we were "price buyers." For several years we went through a period of steady growth.

Then along about 1941 we began to feel our oats. The Huffman spurt into the big time was on. We learned simpler, speedier ways of doing things. Because supply exceeded demand, we branched out enough so that we could pick up alternate suppliers for some of the forgings, stampings, and other items that went into our bicycles. Consequently, we did fairly well with our "price buying" policy.

The war came. Huffman nevertheless stayed in the bicycle production business because the late H. M. Huffman, Sr., then president of the company, convinced the War Production Board that the company could build bicycles with the lame, halt, blind, old and with girl employees, and could do it efficiently for the Army.

Huffman could speak with confidence because his firm was already neck-deep in war work. Many of the Army's oil measures and dispensers were being made by the company.

Only two bicycle manufacturers were permitted by the WPB to continue making bikes. Huffman was one. The demand for military bicycles and conservation of time and material opened up opportunities for intensive studies on how to mass-produce low cost bicycles. We burned the midnight Mazdas while studies were made on how to fan out under wartime conditions and meet production schedules.

The end of the war brought on the race for the civilian market. We revised our plant layout, upped our schedules, began a training program. We were set, if—we could get the materials. H. M. Huffman, Jr., the 32-year-old dynamo who succeeded his father as president of the com-

pany, had his heart set on the production of more bicycles in one shift during a five-day postwar week than had been put out in a two-shift, six-day prewar week.

With the "if" uppermost in our minds, it was "Operation Suppliers." It was goodbye to shelf buying, shopping, sporadic delivery. Our aim was to wipe out the previous buying history written in the Huffman books. We needed a continuous, steady and timely flow of every part we purchased. This flow is the life-blood of a mass assembly plant.

Then, too, we knew only too well that we faced allocations by suppliers—new and old—on the basis of prewar sales. Where did that leave us? Here we were with big production plans, and without suppliers. These plans were predicted on buying as much as we could from outside vendors.

Our first maneuver was a French Lick, Indiana, conference in September, 1945. The presidents and general managers of old, new and prospective Huffman suppliers were invited to a week long conference. It had a three-fold purpose:

(1) To get the suppliers together and explain what the Huffman Manufacturing Company intended to do.

(2) To furnish them with a forecast of production, and actually place orders with them for the entire 12 months of 1946.

(3) To enthuse them with Huffman's production methods, which had resulted in lower operational costs and increased volume of business.

We decided on the conference because we recognized that suppliers' costs were our costs. If we could help them use some of our tried and tested methods to speed up production at lower costs, a substantial part of the savings would be passed on to us. We recognized the necessity for revealing our actual production figures; therefore, utter frankness prevailed. Suppliers were shown that Huffman's policy was to purchase parts from them that amount to 81% of the cost of a bicycle. We could best put the story across on a personal basis.

It didn't take long for the thirty Huffman guests to realize that the bicycle builder had ambitions that *could* be attained. They liked some of the ideas expounded. We showed them how a sound work simplification program functioned. We demonstrated how plant layout could be revised to improve the flow.

We showed the suppliers where each fit in the picture. We told the brake people, the spoke makers, the handlebar suppliers, what we expected from each and what we wanted them to do together.

Results varied. We found that performances turned in by the suppliers were of all types. Some hit right on the nose, others failed. That didn't stop us. We stepped outside of the bike industry for new sources. In every case we followed up with personal visits.

Personal contacts alone enabled us to double the number of our suppliers during 1946. First, we primed them for our personal call and then we sold them on the fact that Huffman was here to stay and that if suppliers joined the team, they would not be members of a dying fraternity, or backers of a waning product.

Instead of another French Lick conference late in 1946, we put out a brochure called "Hop On, For Future Profits" and mailed it to suppliers, airlines, truck lines, railroads and others with whom we worked. It told the Huffman production story as at French Lick, and emphasized the importance placed on suppliers by us.

"Congratulations on the very impressive booklet on the progress and foresightedness of your company," wrote W. P. Moore of New Departure, Bristol, Conn.

Erwin H. Schell of the Massachusetts Institute of Technology said it was a "progressive and attractive method of selling company dollars, and that is what we have to do when we buy raw materials and supplies these days."

"It is an original idea to promote the people from whom you buy rather than the people to whom you wish to sell," said D. A. Kohn of the Lowe Brothers Company, Dayton.

The French Lick conference and the "Hop On" book brought these results: Every 16 minutes of each working day a semi-trailer truck backs up to our loading docks with supplies. Today we rank among the top three bicycle manufacturers in the country in output.

We practice what we preach. Our production program enabled us to announce a price cut—first in the bicycle industry. Some day soon we hope to attain a new and greater production goal.

When we do, our suppliers will be the first ones to be consulted.



"Call yourselves expeditors? Let's see you bring in some copper."



Basic buying procedure starts with price analysis, selling the supplier on proper costs, and helping him to achieve them.

●

By C. W. S. Parsons, M. E.

Consulting Management Engineer

PRICE CONTROL THROUGH SOUND PURCHASING

TODAY even the man on the street talks about goods being priced out of the market. But that idea is in no sense new to the purchasing agent, particularly the buyer in commercial channels buying consumer goods. To him it is as true as it is to the merchant himself: the public can afford to pay so much for a given item, no matter what impulse or sense of satisfaction leads people to place a mark of value on it. Therefore, knowing the formula, as it were, expressing his firm's cost of doing business per dollar of sales, he knows what his company can in turn afford to pay his supplier for the item and still have reasonable assurance of making a fair profit with it.

It is unnecessary to expand on the difficulties, in fact the elements of grief and suffering, introduced into an otherwise smooth sailing business when shortages and generally high prices tempt or lead one to compromise when the basic factors referred to above do not admit of compromise without something going haywire. This is not the place

to picture how men grow gray lying awake trying to figure out how to maintain sales volume and good will.

The Supplier's Responsibility

The fact that is here important is that the commercial buyer of merchandise has long been in the habit of knowing what he ought to pay for goods. On top of that, he has been trained to sell the supplier the idea of what he can pay, and the suppliers' salesmen have been active emissaries carrying that message back to where the goods come from. Just so the mills and factories produce the quality he can sell at a profit, the buyer does not care how they do it. They are supposed to have the brains and imagination, the ingenuity and skill.

But that is only a part of it. The producer, whether of cotton goods or wheat or shoes or coal, who is successful as an operator and can compete in his line of business, presumably has learned his trade, is reasonably equipped to do his job, and has mastered the important

techniques involved. Generally speaking he has prepared himself to offer his wares in a free market.

But the purchasing agent is not buying staples only. He is also buying specialties having production and use and selling features that people are supposed to pay for, and sometimes to pay plenty. Some of these specialties are truly "out of this world". Some are merely "made to order", hence outside the class of low-cost quantity-output items. And throughout the field of specialties, which cuts across the ordinary classifications of commodities and includes many appliances and gadgets, the buyer is confronted with items whose producers are not making staples for a free market and are not necessarily the last word on how to produce and market their goods.

In the latter cases, if he has no suggestions to make, the buyer must either refuse high priced articles or convince himself that his company can sell their special features. And notice that if he makes suggestions, they have something to do with how

labor represents the end result of the careful application of know-how to each production operation in the factory, while overhead is held within bounds. Every item purchased has bound up in its price similar components representing the costs of labor, material and overhead to the vendor, plus his profit. And it is the business of the industrial purchasing agent to know as much as possible about these components.

Naturally only the government, big business, and silver-tongued operators, can ordinarily get away with asking the vendor to supply all of the harrowing details of his costs. Only the first two are in a position to bluntly demand them. But it is possible to make up one's own figures and invite the vendor to compare notes.

Why is this desirable, however handled? Simply because every transaction involving a purchase contains the process of selling. As to every separate point covered in the negotiation of a contract, concerning what the customer feels he must have and what the supplier feels he can deliver, and for what price, a sale is made: either the buyer convinces the salesman his company must meet a particular quality, design, delivery or price requirement, or the salesman convinces the buyer his company must agree to accept a given quality, design, delivery or price.

It behooves the buyer to know as much as, or more than, the vendor about the various factors governing quality, design, delivery and price, so that his action will contribute to the purchasing operation the same kind of appraisal of conditions, and the same application of knowledge of the facts, as the production department brings to bear in planning the work of the factory, all to the end of achieving best economy in the component costs of the company's sales dollar.

Price Analysis

The factors involved in price analysis, in the way of figures that stand for the production operations and the organization management behind the purchased product itself, are in general:

- (1) Labor in man-hours, times average hourly wage.
 - (2) Producer's material costs.
 - (3) Overhead rate, based on labor or other figure or combination of figures, according to practice.
 - (4) Recognized profit margin.
- Just how the analysis of opera-

tions would be made for a particular item depends upon the process, but it would view the methods used, the proper organization of the job, tooling, speeds and feeds or other machine rates, the same as applied by the production routing planner and estimator.

From this it can be seen that proper control of prices by purchasing involves having certain knowledge and experience, possibly in the person of an individual in the department or otherwise made available by production. A price analyst should have the kind of background enabling him to understand materials and processes related to the important items purchased. He should be able to handle costs sensibly and rationally. He should have a large fund of tact for working with buyers and, when necessary, for explaining his position with vendors with all his cards on the table.

A Wartime Example

The Army Air Forces established this function in the Materiel Command during the war. In the Western Procurement District most of the price inspectors or purchase inspectors or cost analysts, as they were variously called, were trained to make careful breakdown analyses from the point of view of shop production, so that in working with buyers of cost-plus-a-fixed-fee contractors they were able when occasion required to discuss with vendors the details of operation sequence, equipment, approximate kinds of tooling, speeds and feeds on machine work, operation times, etc. It should be said that behind this effort was a continued consciousness that it was better to save man-hours and machine-hours in advance than to attempt to do the almost impossible job of supplying the extra men and machines otherwise wasted on contracts that were not properly planned and negotiated.

In a number of instances this activity of the Air Forces led to aircraft manufacturers establishing their own price analysis.

One very important illusion was exploded during that time, which should be pertinent now. The Army's local administrative contracting officers had permitted prime contractors to place orders on the basis of the lowest of three competitive bids. Analysis showed that whether the price was *right* was largely a matter of chance. Only by making the same kind of analysis

as that made by up-to-date production planning offices in low-cost industries, can it be determined that suppliers are planning to do the work by the same economical means as would the factory itself, assuming that it is properly organized to do it.

Sound Margins for Vendors

It should be repeated, in connection with any figures covering labor, material, overhead and profit, developed by analysis of the method projected for the production of important purchased items, that these figures should be tested against a reasonable breakdown of the components of the sales dollar of the vendor, characteristic of his operation, in order to expose readily any obvious inconsistencies in operation or in estimating that would account for a distortion in the price quoted.

For example, if the price of an item consisting mainly of an assembly of machined parts, were \$25, and it were reasonable to suppose that the labor would amount to \$10 and the material \$5, then the price would be a good one, since the cost of doing business would be seasonably provided for and the profit margin close enough. But if the labor and material were only \$8, then the overhead is terrific or the profit beyond reason. Conversely, if the cost of labor and material were beyond question \$20, then the purchasing agent should have great doubt about placing an order for such an item, if it is something needed regularly that could harm production if not delivered, for there is great likelihood of failure by the supplier, or of skimping of quality, or of some other unsatisfactory condition arising to threaten the smooth flow of supplies needed for the company's line operation.

Helping the Supplier

Particularly at this time, it may be very desirable for the purchasing agent to be prepared to see that prospective suppliers understand the methods of production required to make a product profitably at a satisfactory selling price. There are many contractors that have not yet achieved real reconversion since the end of war production. During the past two years they have launched into various high priced items, manufactured by job-shop methods, salable for a while in a hungry market, but from now on unsalable.

As war contractors they were able to produce, with price not too controlling a factor. They grew in

size, acquired considerable equipment. Now they want to be manufacturers rather than the small pre-war job-shop operators many of them were. There have been numerous examples of this on the Pacific Coast. Eastern manufacturers have come west with the idea of subcontracting parts or products to provide for the western market, in shops able to buy scarce materials. Generally the rate on the long freight haul is considerably less on raw material than on the finished product. But still prices quoted are often too high.

It is necessary to understand such a situation. Shop production costs on the same equipment need not vary between states. It is simply that the open-capacity shops are apt to be the ones only accustomed to job-shop operation, not low-cost quantity production. Assuming that the buyer needs a source, here is an opportunity, not necessarily a source of irritation.

If the customer brings to the prospective vendor a clear understanding of the necessity for equipping properly and organizing adequately for low-cost production, sells him the idea, so that he will make up his mind to find out how to do this, then he is binding to him what may become a staunchly loyal and dependable source. For consider this; by encouraging that producer to break away from the bondage of high-cost job-shop operation, with feast and famine records of business, and the threat of competitive low-cost items sweeping him out of the market every time he attempts to put out a product of his own—by helping him to make up his mind to master the management techniques of real self-sustaining industrial production, so that his know-how not only includes merely machine-work or some other process, but analyzing a market, staking off a reasonable area of it, and producing and selling competitively the items he starts out to make—by doing this much to get a job shop busy converting to low-cost manufacture, the purchasing agent is probably saving that operator from failure or economic suicide.

But to do this the purchasing agent must have a thorough understanding himself of what know-how means, of what operating methods, equipment and tooling may be required. He must be able to sell the acceptance of the idea of meeting these requirements, even of investing in the necessary plant and equipment, and of organizing the

work properly and establishing the management policy needed, before a would-be supplier should be considered as likely to become a reliable source.

The fact that so many of such shops (ex-war-contractors) exist, have equipment and capital (which may be dissipating fast), and have certain experience, points to a huge production potential that may become an important source of new jobs. But it does not mitigate the further fact that the background of so many of these shops is high-cost war production.

The services in starting their drive for war production often cried, "Get it regardless of cost", referring to a critical bottleneck item. But down the line, and among producers, lesser lights echoed, "Get it regardless of cost, period". They did not bother to tie that principle to the critical exceptions where—and only—it applied. Nor were they interested to think that if you pay a high price, management goes soft and is not on its toes to save previous man-hours, hence the thing you want in a hurry may take still longer to get if you throw away money buying it.

An Executive Opportunity

These things being so, there is more than ever what amounts to both an opportunity and a necessity for purchasing agents to view their buying from the standpoint of management, analyzing the components in the sales dollar. Any purchasing agent can make his own "buyers' market" by making use of these fundamentals.

Purchasing can not afford to chisel, but it can know what it is talking about, cost-wise, methods-wise, and be able to spot the need for selling vendors on how to go about meeting price requirements. If a buyer were only a clerk in the factory manager's office, it can be understood how he might only chisel and then place orders with the low bidder. But as a department head under the general manager the purchasing agent must, as shown, think in terms of purchasing's cost in the sales dollar, the same as does the sales manager, the chief engineer, the comptroller, the factory manager, the personnel manager, each think in terms of his contribution to the particular component of that dollar, for which he is responsible.

In manufacturing operations, one important control available to the purchasing agent is the list of

purchased materials and parts. Aside from its use to see that everything is in order and coming in on time, it can be utilized as a check sheet to work down the material cost in the sales dollar. By a process of elimination, working on the high-cost items first, and in the descending order of monetary value, it is possible to make an effective check on the level of pricing, and to discover the need for corrective action with respect to important purchases.

To illustrate, the writer found that it was possible to take a spares list as proposed for an airplane contract, and cover nearly 50% of the dollar value of the list by making a careful analysis of the reasonable production cost of the 150 most important items, dollar-wise, out of the several thousand. Since on some of these lists 90% of the parts were purchased, the application of the principle here is apparent.

After making such an analysis it is still necessary to sell the vendor on any indicated adjustment in price. In peacetime production it may often be necessary to work toward the adjustment at the time of the next recorder, but the important thing to remember is that if the company has fixed on a pricing policy for its own products for reasons that may hinge upon competition rather than the company's own current records, then it is going to be up to the purchasing agent to sell his vendors on the necessary cost-lowering ideas if he is going to get his costs within the fraction of the sales dollar allotted to materials.

Production Processes

Where the material purchased is a staple item, it is not so likely that the price will far out of line, as might be the case with some specially designed product, or one having features of an unusual nature called for by engineering. In the latter cases it may be necessary for the purchasing agent to point out to engineering the unusual costs brought about by these circumstances, so that if possible a change may be made to something simpler or standard.

While it should not be necessary in the case of commonly known processes, such as permanent mold casting, which might be substituted for sand casting to save machine-work, there are often occasions when through the purchasing agent's contact with suppliers' representa-

(Please turn to page 338)

PURCHASING

PROGRAM DOUBLED



James Clark McGuire

Port of New York Authority takes over development, maintenance and operation of metropolitan airports

Purchasing department is in close touch with all proposed developments from their planning stage

By George E. Henry

THERE'S a lot of mail being sent out these days from the Port Authority Building at 111 Eighth Avenue, New York City. A good part of it originates in the Purchasing Department, and reads something like this:

Request for Quotation
This is Not an Order

2 crash trucks for airport use as per

Port Authority Specifications for Foam-Crash Fire and Rescue Truck, dated June 15, 1947.

This is typical of several hundreds of requests for quotations now being issued by James Clark McGuire, Director, Department of Purchases and Services, The Port of New York Authority, incident to the leasing, financing, development and maintenance of the well known La Guardia, Floyd Bennett, and Idlewild Airports, the last of which will rank, on its completion, as the world's largest and most complete airport.

Similar notices call for bids on a widely diversified list of maintenance, operating and repair equipment, tools and supplies. Among them you will find quotation requests on six prowler cars, two disc harrows, forty-eight radios—transmitters and receivers, three tar kettles, three rotary snow plows, \$7,000 worth of office equipment, \$9,000 for lockers and benches, \$8,200 for signs, \$24,000 for uniforms and pistols. A partial list of sixty-three items designated as Im-

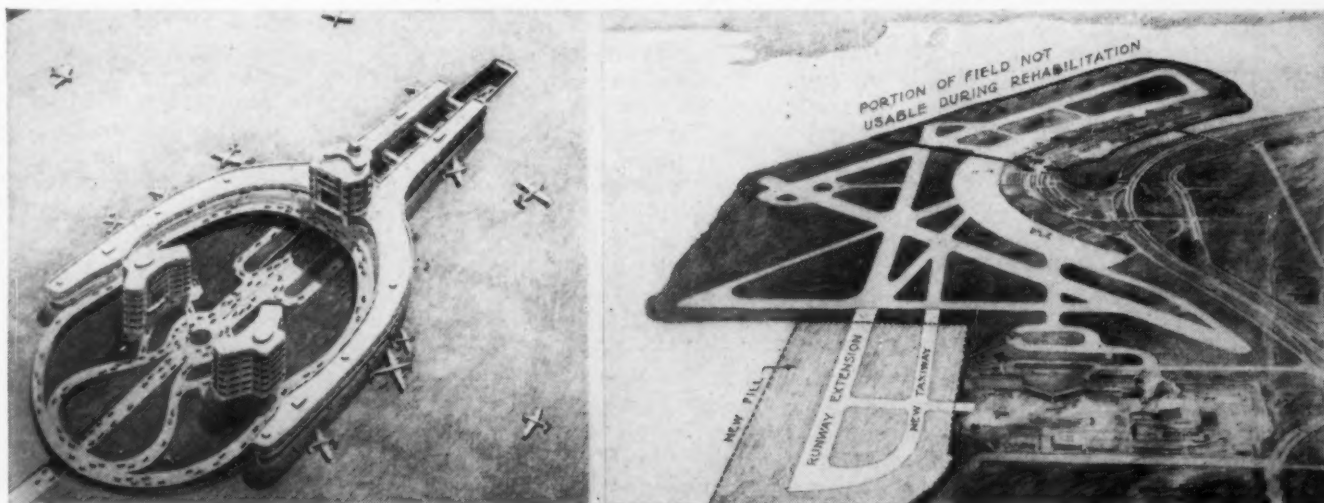
mediate requirements totals expenditures estimated at just under three-quarters of a million dollars.

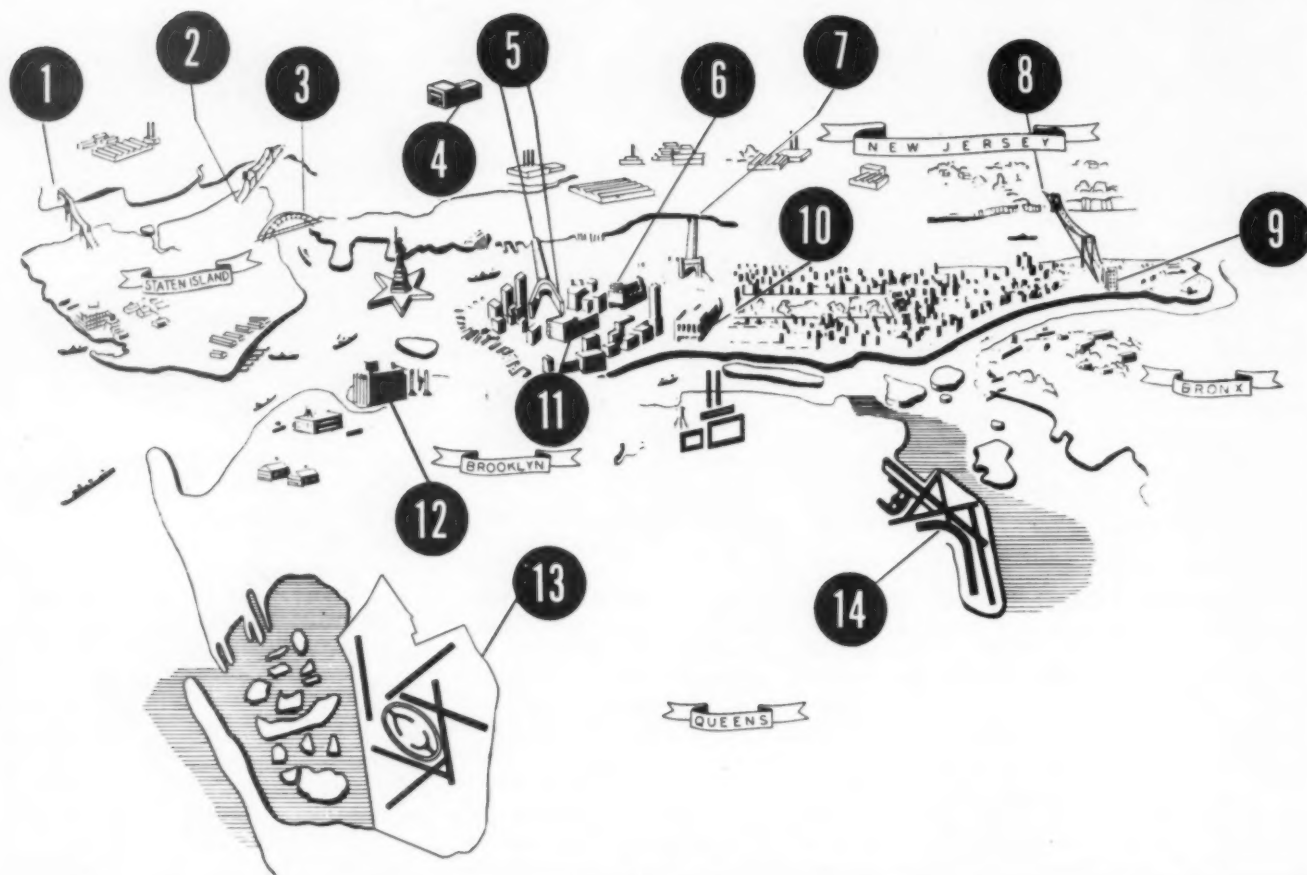
Mr. McGuire is well known among men in purchasing, especially governmental purchasing agents. He is an active member of the Governmental Buyers Group of the National Association of Purchasing Agents, and of the National Institute of Governmental Purchasing, and is currently serving as general chairman of the Second Annual Conference and Products Exhibit of N. I. G. P., to be held at the Pennsylvania Hotel in New York City, September 7th through 11th.

A Public Service

A brief description of the Port of New York Authority and its functions is in order. The Authority is an interstate, non-political, self-supporting agency established in 1921 by the States of New York and New Jersey to bring order out of the chaos that then characterized water and land transportation in the New York metropolitan area.

Airport developments in the preliminary stage: Proposed terminal building at Idlewild and contemplated expansion of La Guardia Field.





PROPERTIES OWNED AND OPERATED BY THE PORT OF NEW YORK AUTHORITY

1. Outerbridge Crossing
2. Goethals Bridge
3. Bayonne Bridge
4. Newark Truck Terminal*
5. Holland Tunnel
6. Port Authority Building
7. Lincoln Tunnel
8. George Washington Bridge
9. Washington Heights Properties
10. Midtown Bus Terminal*
11. Manhattan Truck Terminal*
12. Port Authority Grain Terminal
13. Idlewild Airport*
14. La Guardia Airport

* Under construction.

with its 25 million inhabitants in New York and New Jersey, separated by the Hudson River, Long Island Sound, and New York Harbor. With cities and streets developed in an area that did not envision the stupendous development of the automobile, motor trucks and buses, and that were not adequately planned to serve an ever-increasing population, the problems of traffic and mass transportation and the consequent waste and high cost of metropolitan distribution

Location of Port Authority projects, showing delivery points for purchased materials.

brought the need for bridges, highways, river tunnels, and unified freight and bus terminals.

Now headed by Howard S. Cullman, Chairman, and Austin J. Tobin, Executive Director, the Authority since its inception 26 years ago has developed a career staff, organized on corporate lines to apply the technique of business to the public problems of terminal and transportation development.

It is minus taxing authority, receives no tax money from any source. All of its facilities are financed by the issuance of Port Authority bonds. The Authority has sold over \$500,000,000 of revenue bonds on its own credit, and has built or has under construction some \$280,000,000 worth of bridges, tunnels, waterfront facilities, and consolidated terminals for trucks, buses, and railroad freight.

Among the Port Authority facilities are the world-famous Holland Tunnel and the Lincoln Tunnel connecting the New York and New Jersey shores under the Hudson River, the George Washington Bridge spanning the Hudson, the Outerbridge Crossing, Bayonne

Bridge and Goethals Bridge connecting Staten Island and the New Jersey mainland, the Port Authority Building and the Port Authority Grain Terminal.

In the wisdom of the Commissioners, a central purchasing department was established in 1931, and all of the Maintenance, operating and repair supplies and equipment for these varied projects are bought by specification, competitively or by open market purchases, under Mr. McGuire's direction. These expenditures now approximate \$2,000,000 annually. The Authority now has under construction the two largest Union Motor Truck Terminals in the world, one in New York City and the other in Newark, and also a Bus Terminal in the midtown area of Manhattan which will have capacity for handling 2,500 buses a day.

The Airport Program

And now, in addition, the Port Authority has shouldered the tremendous responsibility of development, operation and maintenance of the large airports serving the metropolitan area, which were formerly

under the jurisdiction of various departments of the city government or (in the case of Floyd Bennett Field) the U. S. Navy. This includes the Idlewild Airport, which even the conservative heads of the Authority describe as a super-colossal project.

The Idlewild Airport is being developed on a tract of 4,900 acres in Queens County. The central terminal building will be ten times the size of the terminal building at La Guardia Field, with which many purchasing agents are familiar. It will feature a modern hotel, numerous restaurants ranging from terraced dining rooms to coffee shops and cafeterias, banks, motion picture theaters, customs, immigration and quarantine offices, and Post Office, besides hundreds of shops and service stores. Between 60% and 70% of the Airport revenues will be derived from airlines

sources. It is expected that the New York airports and their numerous auxiliary businesses will give employment to some 60,000 people.

The actual construction of the new Port Authority facilities will be done on contract, under the direction of the Authority's engineering department. This control also applies to new construction and improvements at all of the airports. The Authority has employed Herve F. Law, nationally known airport authority and former manager of the Washington National Airport, as its Superintendent of Airports.

Mr. McGuire emphasizes that his department is in close touch with every proposed development sponsored by the Authority, practically from its inception. This has enabled the Department of Purchases and Special Services to work closely

with the planning and engineering departments and management, and to procure technical information, catalog material and use information about new materials and equipment long in advance of their actual acquisition.

He states that early contact with suppliers has proved invaluable from the standpoint of acquainting them with requirements, thus enabling them to think in terms of the Authority's specific needs. These contacts, he says, have borne fruit in the way of improved deliveries and have frequently resulted in substantial economies.

"We get in touch with every manufacturer of a needed product that we can think of," he states. "Also, we write to our fellow purchasing agents, particularly those who may have purchased materials

(Please turn to page 336)

Typical automotive requirements—fire fighting unit, snow plow, and jeep crash car—and Mr. McGuire's system of visual presentation of items under consideration.



BETTER PACKING

New packing materials and methods have been developed to combat the rising toll of damage in transit

• By John L. Kent

(Photographs by U. S. Army Signal Corps, U. S. Navy, and Forest Products Laboratory)

Wartime overseas shipments provided a great testing laboratory for packing methods.



THERE'S many a slip 'twixt the cup and the lip—and all the manufactured goods which roll out of our factories do not get to the consumer either. No one steals them, and they're not lost. But they might as well be.

Every year, millions of dollars worth of the nation's products fail to reach the ultimate user because they are damaged en route. The obvious explanation is to say that they are damaged because they are mishandled during shipping. More accurately, in a great proportion of cases, they have been improperly packed, since inadequate provision was made for possible mishandling.

In 1944, about 57% of the total amount paid in claims by the railroads was for damage to packaged freight. In 1945, approximately \$50 million was paid for such damage. A preliminary estimate by the Association of American Railroads reveals that damage claims for 1946 will amount to \$95 million. A considerable part of this \$95 million

HOW'S YOUR PACKAGING VOCABULARY?

Overpacking
V-Board
Beer pack
Cushion pack
Satchel closure

loss is directly due to improper packing and poor containers.

Although packing deteriorated during the war because of material shortages, a vast amount of knowledge was gathered by the military services on performance of packages and packing of all kinds. The necessity of making large overseas shipments under difficult conditions resulted in improvement of old

methods and the development of new ones. These will be of value both to exporters and domestic shippers in the postwar period.

Supplementing experience gained in actual shipping, the nation's military and civilian testing laboratories have exhaustively tested packing materials and containers.

Tests were made to determine the waterproof quality of specific methods of packing, and the ability of a package to "take it" while on a long journey and deliver the contents undamaged by the elements, or by shock, or by the motion of train, truck or ship.

The military services had many problems to solve. During the early part of the war the Army's Quartermaster General was using a domestic corrugated pasteboard box and a so-called "weatherproof" solid fiber box developed in 1941. These were used in preference to wood because of the saving in space and weight, and also because wood was in short supply. In the summer of 1942,

about 90% of all subsistence items were packed in paper boxes.

Experience showed that even the weatherproof box did not perform satisfactorily and was wholly unsuitable for landing operations and operations in areas of heavy rainfall. The Army tried "overpacking." A loaded box was placed inside another slightly larger one. This

Three grades of fiberboard were used. V-1, the best grade, was normally made entirely of virgin fibers. V-2 used both virgin and used fibers. V-3, the poorest grade, considered merely an improvement on the old weatherproof box, outperformed the latter by a large margin.

The development of V-boxes made possible the elimination of

Search was begun to find ways in which the bulk and weight of containers could be reduced, and new specifications were issued for packing materials intended to be used in air shipment.

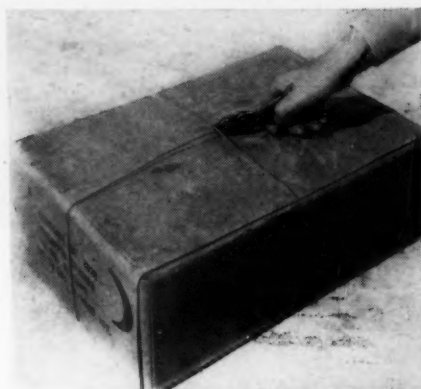
Among the many lightweight packing materials tried was balsa wood. Even before the war, airplane shipments of a few items such as yeast were regularly made in balsa boxes. The lightness of balsa, combined with its comparatively good strength and excellent insulating properties, recommended it as a first-class material for air cargo containers.

The services faced a special problem in the shipment of bottled



Hydraulic testing machine at the Forest Products Laboratory is used to determine least quantity of various types of cushioning materials that will insure safe delivery of fragile goods.

The Quartermaster V-1 box was one of the most successful packages developed through wartime research. It is made of all-kraft solid fiber board, with protective sleeve and reinforcing wire ties.



did not solve the problem and merely added weight.

The Quartermaster General's office began to specify wood boxes for some supplies, but the critical shortage of lumber prevented its use for all required supplies. The weatherproof boxes were continued to be used.

To cope with the steadily mounting losses, the Office of the Quartermaster General initiated research and after some experimenting developed a new type of all-kraft solid fiber board. Tests conducted on three varieties of boxes manufactured from the newly-developed fiber board revealed that they gave more satisfactory performance than the corresponding wooden containers.

The development of this new type of box was one of the triumphs of wartime research. In keeping with the widespread use of "V" for Victory, the new material was dubbed "V-Board" and the boxes became "V-Boxes".

overpacking. This conserved materials and reduced gross weight. The disparity between net and gross weight was a continuing problem to the Navy. The Navy found that heavy wooden crates much larger than the article contained were used by manufacturers who hesitated to take a chance on articles reaching destination in damaged condition.

While the necessity for reducing container weight was important in rail and ocean shipment, it was imperative in the case of air cargo. The excess weight had to be eliminated. For example, 8 pistons for a ship's engine arrived at an air terminal in boxes of 2-inch lumber. They were repacked in one-inch plywood boxes, saving 44 pounds on each box. The repackaging of vital war material for air transit was a common Army and Navy practice in 1943 and 1944. Although repacking resulted in more net weight going by plane, it caused a further drain on manpower for the repacking opera-

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PACKING MATERIALS — 1947

In addition to the conventional packing materials, exhaustive test and experience data are now available on:

Asphalt-laminated kraft
Balsa wood
Cactus fiber
Cotton fiber
Curled wood
Rice hulls
Sponge rubber
Wax - impregnated kraft

Liquids such as vinegar and beer. Because of its acidity, vinegar had to be packed in glass. Beer was also packed in glass, due to a shortage of tin for metal cans which might have assured safer shipment.

In June 1942, the Office of the Quartermaster General specified that subsistence items in glass bottles and containers be packed in a double-walled corrugated fiber container. But this type of box constituted only 2% of the fiberboard industry's production and could not be supplied in the great quantity immediately necessary. The specifications were later changed, and V-1 fiberboard boxes were used.

Meanwhile, glass bottles had to be packed in domestic type corrugated boxes. To help cushion the bottles, The Quartermaster General tried pouring fine dry sawdust into the box to fill the void spaces between the bottles and the cell walls. This extra precaution, first used in ship-

ping of beer, was very successful and the method came to be known as the "beer pack". Later, it was adapted to the shipment of other glass-packaged liquids.

Considerable quantities of precision instruments had to be shipped during the war. Almost all were fragile and many were extremely sensitive to shock. These materials were always packed in cushioning of some sort. However, there were no standards for the amount of cushioning material of any particular type necessary for specific instruments or apparatus.

At the request of the Container and Packaging Branch of the Air Materiel Command of the Army Air Forces, the Forest Products Laboratory initiated a study to find out how much was needed. Many different types of cushioning materials were tested, including sponge rubber, curled cactus fiber, cotton fiber, shredded and curled wood, several types of wood fibers bonded with starches and resins, felt, curled animal hair, and shredded paper.

At its Wright Field laboratories, the Army Air Forces developed and tested a new style cushioned pack, consisting of an internal plywood container supported on pads of sponge rubber glued to the sides, bottom, top and ends of an external plywood container.

During the war, considerable testing was also conducted on paper used to line shipping cases. Because of its excellent facilities for paper research, the National Bureau of Standards in Washington was one of the centers for this testing. The case-lined materials tested included asphalt-laminated kraft papers, wax-impregnated and resin-impregnated sheets. Some were reinforced with fibers.

After exhaustive tests, recommendations were made that case-lining materials should be asphalt-laminated kraft paper containing at least 150 pounds of asphalt per 500 sheets, 24x36 inches, and that the paper itself should weigh 90 pounds per like quantity and size.

The testing of packages made with the various papers was performed at the Package Research Laboratory at Rockaway, New Jersey. Standard wooden and fiber shipping boxes of different sizes were lined with the case-lining materials made into liners of one-piece construction for "satchel" closure. The boxes were filled with steel cylinders and wooden blocks wrapped in paper, and the closure of the liner folded over and sealed with a moisture-resistant adhesive.

The boxes were put through cycles of being tumbled in a revolving drum, dropped on a concrete floor, and bounced on a vibrator, with intermittent spraying with water, under both tropical and arctic temperatures. Upon completion of the cycles, the boxes were opened and the contents examined for number of wet pieces, and the liners were removed and examined for holes, scuffs and other damage.

Much of this wartime research has been recorded in technical reports which are now available to businessmen. In addition, there are reports of investigating officers sent overseas to check on the performance of specific containers and types of packing. This is something that the average businessman couldn't afford to do.

Among the new additions to the literature on packing and specifications for proper packing are the publications of the joint Army-Navy

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Losses on glass-packaged materials amounted to 15%, even with full liners, dividers, and over-packing.



Cushioning materials are important. Shown in this photograph are excelsior and rice hulls.



BUYERS AND SALESMEN

MUST WORK TOGETHER

Sound selling policies help to improve purchasing performance, and progressive buying policies broaden the opportunity for effective industrial sales programs

By **George H. Cole**

Purchasing Agent
Alabama Power Company
Birmingham

A FEW YEARS AGO, it might have been considered an unusual occasion for a purchasing agent, generally supposed to be a member of a listening profession, to be called upon to talk to a group of salesmen, generally supposed to be a talking profession. Times have changed.

We have both learned that our jobs are more closely related than we may have previously realized. The purchasing agent who has not exerted considerable selling effort to obtain his material requirements in recent years is not likely to have turned in a good job for his company or institution, and salesmen have had to listen more to the buyers unburdening their troubles in obtaining materials. Many of us have found it necessary to go to our suppliers, at home and in various sections of the country, endeavoring to sell them on the importance of taking care of our needs and their advantage in doing so. Not so far back, many of us have had to appear before our good friend, Paul Henderson, here with us today, who was District Manager of the War Production Board, and try to sell him on our need for certain materials or approval of projects, and try to win his approval and the highest available degree of priority for them. Paul would listen to us like a good purchasing agent, and sometimes he would say "No" like a tough pur-

chasing agent. But he earned a reputation among our southern buyers for fairness, and we are glad that he has chosen to stay here in the South following his useful governmental service in this section.

The subject of buyer-seller relationships is a large one. In my opinion, the promotion of better buyer-seller relationships in our area has been somewhat neglected, and may well be given more attention on both sides of the fence. Two important phases of the subject, from the viewpoint of the buyer, are: (1) the importance to both of us of maintaining cordial relations and confidence, and (2) the economic importance of developing better buying as well as better selling in our area.

Need for Cooperation

Certainly the market conditions of the past few years have been unusual. Ever since we started purchasing under the priorities and allocation regulations enacted in 1940, and in all the difficulties and dislocations that have since developed, buyers have needed all of the

help we could get from the selling organizations. We have found, and naturally so, that the salesmen who contact us are the best source of information as to changing delivery conditions, as well as other information relative to the products handled. Many were the times that our buyers were able to avoid serious situations, thanks to knowledge obtained through selling organizations closely in touch with the development of conditions that called for the placing of orders further in advance.

With the necessity of forecasting requirements much further in advance than normally, and the resulting increased inaccuracies, many bottleneck situations have developed. Naturally, we buyers have looked to those who have been selling us the materials in the past, for assistance in solving such bottleneck situations, usually through special scheduling. Buyers who have recognized the importance of maintaining good relations with selling organizations,



Address before the City Salesmen's Club of Birmingham, July 22, 1947.

have generally not been disappointed in the results obtained when they presented the need of assistance in such situations from cooperative sellers. These selling organizations are usually close to the production authorities and have had the necessary influence to obtain the full cooperation of production in cases of urgency.

This longest sellers' market of modern times has certainly been no bed of roses for the salesman. His has been the job to contact customers and advise them of disappointing delays, and to try to minimize the effect upon customer operation in cases of urgency. It has been no easy job to persuade harassed factory officials to place urgent customer orders in preferred position. But those selling organizations that have recognized opportunity and have put forth their best efforts to assist customers in these trying times have not wasted their effort. Buyers will remember these valuable services.

Changing Conditions

Following about eight years of the most pronounced sellers' market in history, it is generally recognized that we are now approaching a buyers' market in which supply will generally be in balance with demand. To some extent, we have already entered upon such a condition. This is a more normal condition of business, and the conversion to this buyers' market is welcomed by sellers and buyers alike.

But new problems are involved. More selling effort than ever before must be exerted to sustain the level of business necessary to maintain our type of government and economy. Better standards of living are demanded. Particularly in our section of the country, attention must be given to buying practices, as well as selling methods, if we are to maintain the high level of business activity that is necessary for our future business progress. The opportunity is good, and I believe that both our top business executives and our buyers are aware of the importance of developing our buying.

Progress has been made in this direction. A few years ago, *PURCHASING* Magazine made a survey which showed that 69% of top purchasing executives of companies with branch plants in various sections were of the opinion that branch plant personnel should be granted liberal authority in purchase decisions and the placement of orders, they being closer to the

problems involved and in the best position to consider all factors and act quickly. Following this trend, more competent purchasing personnel has been placed at many of the branch plants located in our area, and with more liberal purchasing authority. This has created a better market for the salesmen in the South. More attention is being given to purchasing by other industries in this section, and more authority delegated to purchasing personnel. This likewise establishes a better market for selling organizations and reduces the time required to present selling programs properly to responsible members of buyer organizations.

Economic Responsibilities

Our buyers are more aware of their opportunity to contribute to the economic welfare of our section. We must recognize the economic importance of holding our purchase transactions within our area to a reasonable extent. I quote two expressions from men in other sections of the country to show that these other sections are also aware of this principle.

In a talk before the Public Utility Buyers' Group of the National Association of Purchasing Agents

in Chicago last February, R. H. Hargrove, Vice President and General Manager of the United Gas Pipe Line Company, and former President of the American Gas Association, said: "Purchases insofar as practicable should be made in the territory in which the particular company operates, even though this may require modest price concessions. This reasoning springs not from altruism, but from the very practical logic that the general betterment in business conditions in the territory will more than offset any initial price saving and will eventually permit equalization of pricing."

In a prize winning paper submitted in a National Association of Purchasing Agents contest, a New England purchasing agent included the following: "The purchasing department will have some responsibility in the postwar and reconversion period to the local area in which it operates and to the general national economy. Granted that this responsibility cannot be discharged by a single department, but as a group, cohesive or otherwise, tremendous influence can be exerted that will have far reaching results. By the policies adopted, purchasers can

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"In the interest of good clean competition, you can argue the respective merits of your products—and may the best man win!"

Pages From a Buyer's



Notebook

DECENTRALIZATION

There has been a lot of comment recently about the "trend toward decentralization" of purchases. Ford's recent reorganization of branch plant buying is cited, along with a half dozen similar instances among the larger industrials with branch plant operations scattered over wide geographical areas.

It seems to me that such an interpretation reflects both a misunderstanding of what has taken place and a misuse of the term. The delegation of specific responsibilities represents sound administrative technique, a necessary and effective means of executive control in operations of any substantial size regardless of the geographical factors that may be involved.

Decentralization occurs only when the purchasing authority is delegated out of the purchasing department and placed under the jurisdiction of some other functional executive. You might as well say that buying is decentralized when purchases of steel are delegated to one buyer and purchases of printing to another.

As a matter of fact, under "divisionalization" of buying, which is the more accurate term, central control and authority are strengthened. In the first year of such operation in one company, 300 additional items were brought under blanket contracts negotiated at the central office, binding on all procurement at the several plants. That's good purchasing, and good centralized administration.

WORKING CAPITAL

Most of the Purchasing Agents Associations seem to be in a highly solvent condition, thanks to the extraordinary increase in membership over the past several years. A few of them have even reached the point where it becomes embarrassing for the treasurer to read the financial report in open meeting.

Like the prudent conservators they are, purchasing men have established reserves as a safeguard against the proverbial "rainy day". That is good management, but it can be overdone. Progressive Association leaders in many cities are now advocating that these funds be put to work in expanding activities and services for the membership. The educational programs present one very logical use for such working capital.

The tendency to hoard financial resources is not peculiar to purchasing groups. One prominent buyer who was called upon to address a business club in another city recently came upon an interesting example of fiscal philosophy. The Secretary, thanking him for his part in the program, said: "We have a budget appropriation for reimbursing our guest speakers, but many of them prefer to contribute their honorarium to our fund. Perhaps you would like to do the same."

The Purchasing Agent was interested. "And what is the purpose of the fund?" he asked.

"To get better speakers."

DEAD END KIDS

I've had a very promising young man working up through the purchasing department for the past few years. He is interested in purchasing as a career and has the qualifications to make a first rate buyer, given just a little more seasoning of experience—and the opportunity of handling a top buying job. The first of these I could provide, but because of the relatively small size of our organization and the fellows ahead of him in line, the second seems to be still some years away.

So when our production planning department was looking for a man recently, I arranged to have my young man transferred to that position. It means to go ahead a little faster.

The production manager was glad to get him, but a little surprised at my willingness to let him go. Why not? If he has the stuff that I think he has, I couldn't hold him anyway, and I would rather lose him to another department of my own company than to some other house. Three or four years from now, if the right opportunity develops, I may get him back and he'll be a better purchasing man for his production experience. Meanwhile, it's a good idea to have a purchase-minded friend in production.

THE PROPER SETTING

The president of one of the good substantial old companies in our city recently instructed his purchasing agent to select for him a complete new set of private office furniture and accessories. He specified that it was to be a working office, neat but not gaudy, but in addition to being efficient and businesslike, it was to be comfortable, modern, dignified, gracious, hospitable, good looking—in short, it was to personify the character of the company itself, conveying the impression of solid prosperity, good taste, friendliness, and progressive thinking. No reasonable expense was to be spared.

The purchasing agent "went to town" on the project, and assembled an outfit to delight the heart and the eye of any executive. No detail was overlooked, from the rug on the floor to the lighting fixture overhead. The president beamed approval.

Imagine the purchasing agent's astonishment then, as the president's next instruction was to have the new furnishings installed forthwith in the buyer's own office in place of the severely utilitarian equipment with which he had been working.

"That's where the great majority of business impressions are made," the president explained. "Day after day, you see a dozen callers for every one that gets through to my office, and I want to be sure that they get the right idea of the sort of company they are dealing with. Don't think that I am getting soft or altruistic. I'm proud of my company, I want you to be proud of your office, and I believe that this will help us all."

CENTRALIZED CONTROL IN A DIVISIONAL PURCHASING SYSTEM

• *By Fred M. Burt*

Purchasing and stores operations for the far-flung organization of the Union Oil Company are closely coordinated under a policy of delegated responsibility and authority with strong centralized control

With the central control at the head office in Los Angeles, under Manager of Purchases E. H. Weaver, the Purchasing and Stores system of the Union Oil Company of California gains much added flexibility of operation, for faster and more efficient service, through a policy that includes a considerable amount of decentralized purchasing and warehousing.

The marketing operations of this company are spread over seven western states, and extend into Alaska, Hawaii, Lower California, Panama, and Central America. The drilling and production operations also extend to many other localities in the United States and abroad.

The Minute Man Supply Division, with warehouses in Los Angeles, Emeryville, Portland, Seattle, and Phoenix, supplies hundreds of catalogue items of automotive and service station supplies, to some 3,400 service stations. These include the service stations that are Union

Oil owned and operated, or leased; also independent stations or garages obtaining supplies from the Minute Man Division.

Operating departments of the company include: pipeline, marketing, marine (operating tankers), refinery, automotive and other distribution to maintain stocks of company products at distribution points to supply retail outlets, the garage division for maintenance of equipment, and field (drilling and producing).

The diversified and widespread procurement for all of these divisions and departments is the responsibility of the Head Office and District Purchasing Departments. Warehousing and issue of supplies are duties of the Stores Department. Both of these operations are under the authority of Mr. Weaver and his assistants in their various key positions.

Mr. Weaver is kept in close touch with the company's overall activi-

ties and program as a member of the Management Committee, devoted to labor relations, union and otherwise, and as a member of the Industrial Relations Advisory Committee. Back of this is a record of nearly thirty years of service with the company, starting as a buyer in the Los Angeles office and including twelve years as District Purchasing Agent at Seattle, where he also supervised the buying for Union Oil Company, Ltd. He has been in charge of purchases at the headquarters office since 1937. Mr. Weaver has been consistently active in Association affairs. He is a past president of the Washington Purchasing Agents Association and a past vice president of N.A.P.A. for District No. 1. He is one of the authors of the N.A.P.A. Handbook of Purchasing Policies and Procedures.

An Exacting Program

While it was often productive

E. H. WEAVER

Manager of Purchases



C. S. PERKINS

Assistant Manager of Purchases



WILLIAM STOCKERT

Chief Clerk, Purchasing Department



of the tearing of the hair and masticating of nails, the Union Oil Company was kept adequately supplied during the serious material shortages of the war years and the period of industrial upset that has followed. To contend with a seller's market and still consistently deliver the goods as needed, whether a drilling derrick, a lawn mower, or twenty complete service stations for the Philippines, took—and still takes—a lot of doing.

At times the buying methods are slightly unorthodox, particularly in the tactics of the men buying for the Field and Pipe Line Departments, where "trading" still prevails. Not very long ago they bought ten miles of used pipe of a size that wasn't needed—just for trading purposes, to be swapped to other oil companies for pipe that could be used. In this roundabout manner, an urgent requirement was satisfied when normal purchasing procedures did not avail.

Down in Paraguay, where at certain seasons of the year, with good luck, a truck can make five miles a day by winching itself along, the company has 26 Fords. To fill an order from this field for hundreds of Ford springs and a thousand blowout patches, another buyer had to make a veritable special project out of the job, driving to virtually every dealer in and around Los Angeles to make up the shipment.

At times, the Purchasing Department scours the country for material. At a time when there wasn't enough cement loose on the whole Pacific Coast to patch the front steps, 3,000 sacks were needed in Costa Rica. It was ultimately secured through a concern in Phila-

ALFRED PAGET
General Storekeeper



FORM 7 9-48 10M SETS
PRINTED IN U. S. A.
ORIGINAL
FOR VENDOR

Union Oil Company of California

PART OF PURCHASE ORDER No. _____ REQUISITION No. _____ ISSUED _____

TO _____ AT _____

QUANTITY	UNIT

FORM 6 L.A. 9-48 12M SETS
ORIGINAL
FOR VENDOR

UNION OIL COMPANY OF CALIFORNIA

SHIP TO
UNION OIL COMPANY OF CALIFORNIA

CARE OF

AT

VIA ☐

TO ☐

TERMS _____ **FOB** _____

QUANTITY	UNIT	DESCRIPTION	PRICE

76

PURCHASE ORDER NO.
LOS ANGELES 14. CALIF

REQ. NO. _____ **W. O.** _____

A. F. E. _____ **DEPT.** _____

BILLING INSTRUCTIONS
Forward invoice in triplicate and all Shipping Papers to Purchasing Dept., Union Oil Building, 817 West 7th St., Los Angeles 14, Calif.
When invoice covers prepaid transportation charges, always attach original receipted transportation bill. PURCHASE ORDER NUMBER must be shown on all invoices, Shipping Papers and Packages.

FORM 76 12-48 12M SETS
PRINTED IN U. S. A.
ORIGINAL

UNION OIL COMPANY OF CALIFORNIA
REQUISITION FOR PURCHASE OF MATERIAL
(IN TRIPLICATE)

No. 47602

TO MANAGER OF PURCHASES _____ **STATION** _____

UNION OIL COMPANY OF CALIFORNIA _____ **DEPT.** _____ **19**

LOS ANGELES, CALIF. _____ **REQUIRED IN** _____ **DAYS**

SHIP TO UNION OIL CO. OF CALIFORNIA _____ **CARE OF** _____

AT _____ **VIA** _____

QUANTITY WANTED	DESCRIPTION (USE SEPARATE LINE FOR EACH ITEM) WHEN POSSIBLE USE TYPEWRITER TO PREPARE REQUISITION	QUANTITY		PURPOSE FOR WHICH REQUIRED
		ON HAND	ON ORDER	
1				
2				
3				
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20				

APPROVED FOR PURCHASE (DATE) _____

SIGNED _____

TITLE _____ **TITLE** _____

Requisition Form, Purchase Order, and Change Order or
Continuation Sheet.

delphia and was shipped out from Baltimore.

But while much purchasing has to be done in this "catch-as-catch-can" manner, by far the major portion of the buying follows a more normal and systematic pattern.

General Policies

Identical materials used throughout the country—light globes, packing for pumps, office machines, stationery, and the like—are purchased under master contracts with large manufacturers or distributors. Day-by-day needs, and those of individual departments, are handled through purchase orders issued to approved supply sources. Approximately 6,000 purchase orders are handled monthly. The purchase order may cover anything from a \$5 hand tool to a delivery against a half-million-dollar contract. Each month, several million dollars of invoices are authorized for payment by Purchasing.

Minor contracts for construction, those for projects costing up to \$75,000, are handled through the Purchasing Department. When the company goes into a major development, such as a new refinery, it may do no actual purchasing of materials, but it does provide the contractor with a list of manufacturers whose products meet the company's specifications. It also checks the bids, and sometimes assists in procurement.

With the exception of the Montana and Texas-Gulf Divisions, where the Purchasing Agents are responsible to the Division Manager

rather than to the central Purchasing Department, the company is divided into four Purchasing Districts: Los Angeles, Santa Fe Springs, San Francisco, and Seattle. Each District is headed by a Purchasing Agent who is assisted by a staff of buyers. In addition, there is what the Department calls its "Head Office Group". This consists of Manager E. H. Weaver, Assistant Manager C. S. Perkins, General Storekeeper Alfred Paget (in charge of the various warehouses), and two buyers. This group handles special buying, major contracts, and export buying.

Purchasing for Export

Export buying—procurement for Field and Marketing operations outside the United States—is a business in itself. The export buyer not only has the usual procurement difficulties, but he must also cope with the American export regulations and foreign import laws. The usual procedure is for the Department to buy its materials in the United States, arrange for export licenses, then ship the goods from whatever port may be best situated. For example, food may be shipped from New York, goods manufactured in the Middle West through New Orleans, and so on.

The government has set up three lists of commodities: a general list of those which may be exported freely; a second list showing those items which may go out of the country only under special license; and a third list composed of things which may not be exported because

they are badly needed at home. Rope comes under the third category. When rope was needed for the Paraguayan project, it was purchased in Mexico and shipped under bond to New Orleans, then transshipped to South America.

Time is an important element in export buying. Requisitions must be placed far in advance of actual need, for by the time licenses are secured, orders placed on manufacturers' schedules, and the material shipped and received, eight or nine months may have passed.

The principal part of current export buying is for the Marketing Department, as it reopens territories in the Philippines and the Orient, and expands its facilities in Central America. Railroad cars, tanks, automobiles, and enameled signs lettered in Spanish were bought along with the 20 service stations previously mentioned; and 250 gasoline pumps and 275 farm units were purchased to be sent to Mindanao, Sabu, and Luzon.

On most of these export purchases, the dealings are direct with the manufacturer. Packaging, mode of transportation, dates of shipment and arrival, are worked out by the Purchasing Department. Also the omnipresent problem of import laws further complicates matters. At Buenos Aires, for example, only 25 tons of flammable material may be brought into the docks by any one ship. Hence, if a shipment exceeds 25 tons, Purchasing must either split the cargo among several vessels or arrange to have it unloaded by lighters, whichever is the

General view of the buying section, Los Angeles, and Head Office Purchasing Department. Facing the camera, from front to rear, are Fred Laverin, R. R. Fenton, C. S. Meade, Annis Tulley, Jack Stirret, and Harry De Vasher, buyers.



HENRY McMASTER
Superintendent of Salvage Sales
Santa Fe Springs

A third type of buying is the procurement for the Minute Man Supply Division of the Marketing Department. Because this Division was organized as recently as 1941, Marketing and Purchasing have been in constant competition with older established jobbers for scarce accessories such as spark plugs, tools, lamps, oil filters, and in fact for the entire catalogue list.

Purchasing Procedure

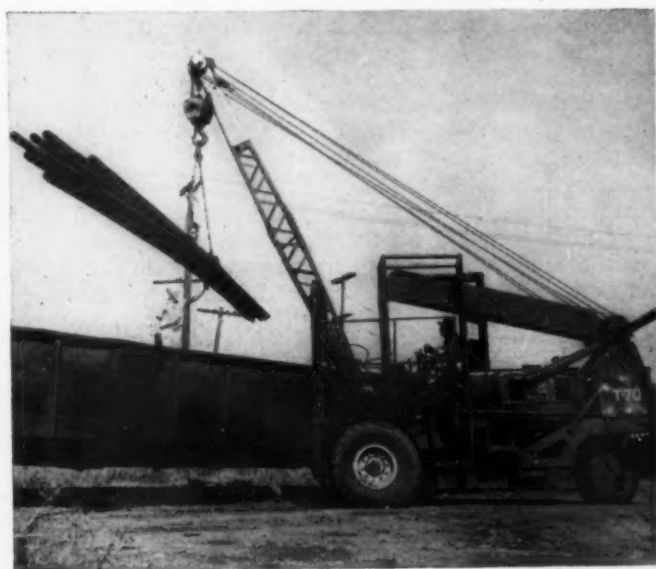
The requisition is a three-part form. Copies 1 and 2 go to the Purchasing Department, while copy 3 is retained at the point of origin. Copy 1 is the working copy, and is filed numerically according to the requisitioning departments. Attached to it are all quotations, correspondence, etc., accumulated in the process of handling. If the requisition calls for items covered by

Form 9 10-55 216 REV. PRINTED IN U.S.A. ORIGINAL FOR SHIPPING DEPARTMENT	<div style="text-align: right; font-size: small;"> ORIGINAL FOR SHIPPING DEPARTMENT DUPLICATE FOR REQUISITIONING. RETURN TO CORRESPONDING CLERK WHO WILL SIGN AND RETURN TO HIS ACCOUNTING OFFICE TRIPPLICATE FOR REQUISITIONING QUADRUPPLICATE FOR MANAGER OF PURCHASES QUINTUPPLICATE FOR MANAGER OF PURCHASES </div> <div style="text-align: center; margin-top: 20px;"> <h2 style="margin: 0;">Union Oil Company of California</h2> <h3 style="margin: 0;">INTER-DEPARTMENT REQUISITION</h3> </div> <div style="text-align: right; margin-top: 10px;"> Nº 17699 </div> <div style="text-align: right; margin-top: 10px;"> CAL. _____ 194____ </div> <div style="margin-top: 20px;"> TO UNION OIL COMPANY OF CALIFORNIA </div> <div style="margin-top: 20px;"> AT _____ </div> <div style="margin-top: 20px;"> SHIP TO UNION OIL COMPANY OF CALIFORNIA </div> <div style="margin-top: 20px;"> CARE OF _____ </div> <div style="margin-top: 20px;"> AT _____ </div> <div style="margin-top: 20px;"> VIA _____ COLLECT _____ </div> <div style="margin-top: 20px;"> MARK _____ </div> <div style="margin-top: 20px;"> CHARGE TO _____ DEPARTMENT REQ. NO. _____ </div> <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p style="text-align: center; margin: 0;">INSTRUCTIONS</p> <p style="margin: 5px 0;">Offices provided with Journal Vouchers will prepare Form 68 to cover delivery, sending to receiving office, showing above Requisition Number.</p> <p style="margin: 5px 0;">Other offices will charge in monthly warehouse distribution, supporting charge with detailed statement of material in triplicate, showing Requisition Number.</p> </div> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 20%; text-align: center; padding: 5px;">QUANTITY</th> <th style="width: 20%; text-align: center; padding: 5px;">UNIT</th> <th style="width: 60%;"></th> </tr> </thead> <tbody> <tr> <td style="height: 100px;"></td> <td></td> <td></td> </tr> </tbody> </table>	QUANTITY	UNIT				
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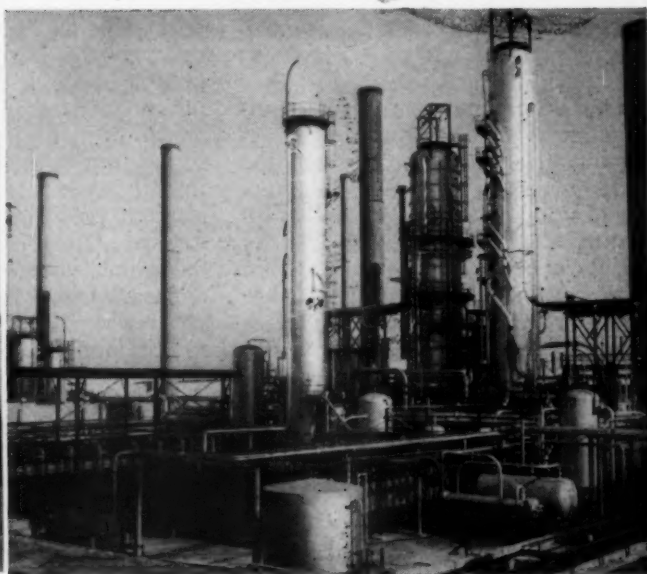
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Back-Order Stationery Requisition, and Inter-Department Requisition covering transfer of materials.

Handling materials at the Santa Fe Springs warehouse.



Crude distillation and gasoline re-run towers.





Warehouse of the Minute Man Supply Division.



Los Angeles Stationery Warehouse.

a contract, or for which the Authority for Expenditure or a Work Order has previously been issued, and for which a number has been assigned, the number is entered under "Purpose for Which Required". Copy 2 of the requisition is an extra copy for special uses, such as enlisting the aid of the Purchasing Department in another District in procuring the items needed.

From the requisition, a seven-copy Purchase Order is made up. The Purchase Orders are pre-numbered, with a different series of numbers for each District. The following procedure is generally used:

Copy 1 is sent to the vendor.

Duplicate copy goes to the requisitioning department, where the receiving clerk uses it to check the items ordered; thence to the accounting office of the District's Operating Department. Each District has its own accounting set-up, but pays no bills. All payments are made from the central Disbursements Division at the Head Office in the Union Oil Building, Los Angeles.

Triplicate copy also goes to the requisitioning office, where it is retained in the accounting file as a tickler copy.

Copies 4 and 5 go to the Head Office, where the former is used as

a working copy and is finally filed numerically as to Purchase Order number in the central purchasing files. With it are filed all correspondence, data, invoice copies, and any other pertinent papers associated with the transaction. It is also used as a working copy in the Accounting Department, as will be explained further. Copy 5 is filed alphabetically as to vendors' names, for cross-reference purposes.

Copy 6 is retained by the District Purchasing Office where it is issued, and is filed with the copy of requisition kept there. The Purchase Order forms for all district offices are the same except that the address of the subject office is printed under the order number and that there is a variation in the colors used for the copies sent to the Head Office, making it easier to distinguish and separate them there in handling.

Copy 7, as soon as the order is made out, is sent to the Disbursement Division, where all payments are made. It is used principally for the auditing of freight charges. All purchases are made on the f.o.b. shipping point basis, with freight bills paid by the Disbursement Division. If a purchase is made from a quotation that includes the delivery charge, Union Oil Company is frequently called upon to pay the freight, but the vendor is expected

to make this deduction on the invoice. This copy is kept in a numerical file in the Disbursement Division.

There is also a tissue copy of the order, this being an extra copy to be used for any purpose as may be indicated. It was chiefly used in connection with priorities when the latter were heavily in vogue.

A supplementary form, entitled "Part of Purchase Order No. ..." is available in similar sets and correspondingly colored sheets, for use as a continuation sheet on long orders or to make changes in the original order as needed after issuance. The appropriate order number is inserted, coinciding with that of the order to which the supplement applies.

Accounting Procedure

Invoices are received in triplicate by the Purchasing Accounting Department, where they are processed. With about 6,000 orders issued each month, and possibly two to three times that many invoices received, this is no small chore. The invoice receiving clerk sorts out the invoices and matches them up with the working copies of the purchase orders. The price clerks check the invoice prices against those on the orders, and the accomplishing clerk similarly checks descriptions and

quantities. The invoice analysis clerks take final action, generally resulting in approval for payment, in the name of Chief Clerk William Stockert.

The Purchasing Accounting Department keeps the third copy of the invoices, and sends the other two, after payment approval, to the Comptroller and for payment to the Disbursement Division. Then these copies are sent to the department receiving the material. Here they are checked against the receiving record, and after the proper notations have been made, the original is returned to the Comptroller's office and the second copy is retained for their files. If the invoice and receiving records can not be reconciled, the matter is reported to the Purchasing Accounting Division for adjustment.

Miscellaneous Procedures

Since the Purchasing Department, including the Stores Section, is a service department, a monthly record is kept of all purchase orders issued. This is tabulated according to the departments for which the purchases were made, so that the operating costs of the Purchasing Department may be properly prorated against the departments benefited by the service.

To expedite obtaining supplies,

or to make use of surplus stocks, the five-copy "Inter-department Requisition" form is used.

The "Back Order—Stationery and Office Supplies" form is used by various departments in obtaining supplies from the Los Angeles Stationery Warehouse in addition to the requisitions used in obtaining major stocks of such supplies. This warehouse is a central source supplying all departments of the company with printed forms and desk supplies. These stocks are maintained through requisitions for purchase on the Los Angeles District Purchasing Office. Stationery and printing requirements (with much of the printing done in the company's own printing plant) not carried by the Los Angeles warehouse, are referred back to the proper District Purchasing Office.

Another procedure that expedites the obtaining of needed items is the blanket order for supplies. For instance, the Santa Fe Springs Purchasing Office will issue blanket orders for certain supplies, covering a month's requirements or a little more, to the nearby supply houses of established vendors. Then a foreman, for example, may fill out a simple form, in duplicate, listing his requirements, and send it to the supply house by a truckman. The latter leaves one copy with the ven-

dor along with their delivery slip which he signs on receipt of the goods; he returns the second copy of the requisition-order and a second copy of the delivery slip, to the foreman. The supply house sends its duplicate copies to the Purchase Accounting Office in Los Angeles with the invoice.

When certain items are needed quickly for which there is not sufficient demand to place blanket orders, the Local Purchase Order is used. Authorized superintendents are furnished with these forms. They are in quintuplicate, 4½ by 6 inches in size, consecutively numbered and furnished in book form. The first and second copies are left with the vendor when the material is picked up. The third copy goes to the local accounting office; the fourth copy stays in the book, and the fifth copy is sent to the local District Purchasing Agent. The vendor attaches one copy of the Local Purchase Order to his invoice, which is sent to the superintendent ordering the material. The latter OK's and sends them along to his District Accounting Office.

In order that there may be no unnecessary duplication in testing new materials and other products at different locations, a system has been devised to keep close control over such testing. Regular reports

Warehouse stock record, kept in visible binder with item index on lower edge of sheet; vouchers for material issued from or returned to stock.



Petroleum products at the source. View of Union Oil Company's oil, gas, and water lines on Callender Lease. Gas lift header is shown in left background.

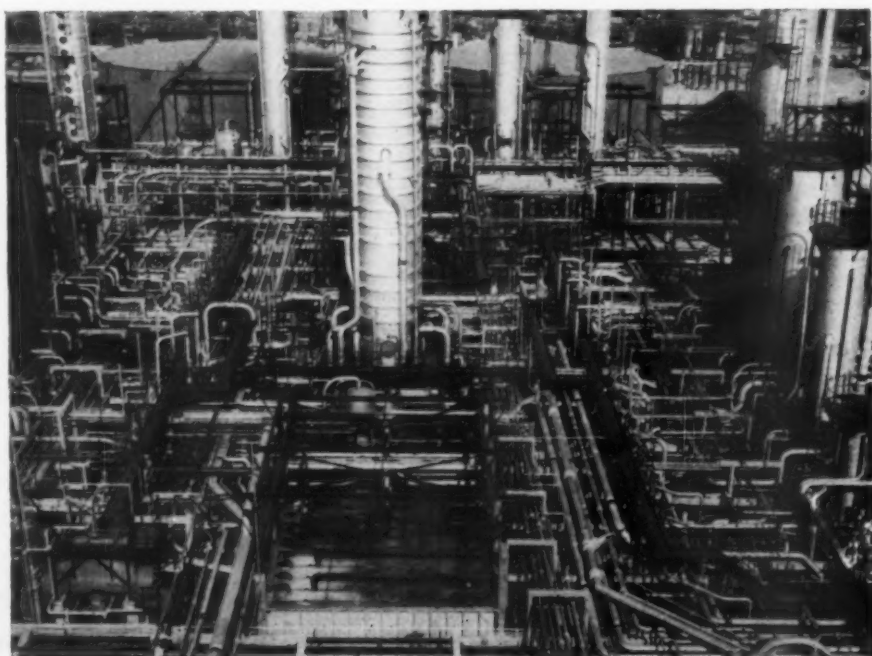
posals. Scrap, obsolete machinery and equipment, and certain surplus or excess inventories must be old. He is notified of cases of obsolescence as they occur, or the wearing out or overstocking of units, and is called upon to use his judgment as to the best means of disposal. A complete unit, such as a refinery, may no longer be profitable to operate. He must determine whether to salvage certain parts or to scrap the entire project. Plants must be kept cleaned up. With his overall knowledge of what is used at different locations, Mr. McMaster can often find a valuable use for some equipment rather than to scrap it or sell it. Late figures show a yearly amount of 3,900 tons of scrap disposal, with scrap and surplus sales of about \$310,000.

Mr. Weaver and his personal staff fight shy of participating in the mechanics of the operations of these various departments, delegating as much responsibility as possible to the key men and expecting them to measure up to it. He believes in being sufficiently free from details that he may devote his time and energy to the planning of improvements in the system, planning policies, and making the final decisions on the problems that must inevitably come to his personal attention. It is an organizational set-up that is calculated to help men grow in capacity, through the exercise of authority commensurate with the weight of the responsibility.

are made of tests under way. Each report lists the Test Number assigned, a description of the material or other product being tested, with details of the status of the test or the results obtained. In the last column is the location where the test is being made, or the several locations where more than one test is being made of the same material. These reports are distributed to operating departments using similar equipment, thus forestalling the possibility that they will duplicate work already done or waste time on unnecessary tests.

The Department for Disposal of Surplus and Unnecessary Assets, under the direction of Superintendent of Salvage Sales H. C. McMaster, has its headquarters at Santa Fe Springs. Mr. McMaster has an assistant and an office girl, and is one of the busiest men in the entire organization. He has the responsibility of salvaging and reclaiming as well as making dis-

Combination distillation, cracking and polyform plant.



The Salesmen Say

that top purchasing executives are showing a keen interest in the sort of reception and interviews that visiting salesmen are being given by the buying staff. In one of the larger companies, the Director of Purchases makes it a practice to come out into the reception room two or three times a day, and asks the waiting salesmen whether they are being satisfactorily being taken care of. Perhaps as a result of this concern in high places, there is little cause for complaints on this score.

that purchasing departments generally are adopting a much more liberal policy than before in respect to permitting salesmen to get into plant and operating departments for specific study and recommendations regarding the application and use of their materials and supplies, and that the buyers are eager to talk over the reports of such studies. Results of such policy are said to be mutually profitable in rather a big way.

that the latest price advances probably represent the peak of the present movement, and may be expected to remain stable for the next year or so. Recent price adjustments are regarded as being on the conservative side, closely keyed to current costs. Prediction of stability is predicated on the assumption that wage rates will be stable over this period. Many of the companies have recently concluded contracts with their workers, these agreements to be in force for a year, which lends force and probability to the price prediction. Prospects for cost reduction are discounted by the fact that present margins and profits are attributed principally to large volume operations and may be expected to diminish rapidly if and as this volume declines and comes closer to the break-even point.

that forecasts of demand in consumer goods can not be made with any great degree of accuracy, but that a reasonably optimistic interpretation is justified rather than the widespread tendency to discount present backlogs of orders. It is conceded, for example, that there is a considerable amount of duplication or "phantom demand" in the orders for lower priced automobiles—perhaps amounting to as much as 25%—but this is not capable of measurement, nor even of intelligent estimate, so long as the backlog is increasing, as is currently the case. Nor is it a significant factor so long as this increase continues. When backlogs of demand begin to diminish more generally, the process will be accelerated by the disappearance of duplicate orders, but that phase is still several months away.

that the long-heralded new "wonder materials" of wartime research and development have not made any appreciable impact on industrial markets, and purchasing departments are properly cautious in declining to show any great enthusiasm for adopting them in the present untried stage. But purchasing and design men are giving valuable direction to research and applications in their inquiries for specific qualities such as lighter weight, better appearance, and greater resistance to wear in particular product applications. In this way both maker and user will best capitalize on the technical progress of the past few years.

that salability and customer acceptance are increasingly important as quality factors and purchasing motives. This is a natural development in a highly competitive business period, and reflects the sales-mindedness that is bound to be one of the outstanding char-

acteristics of business policy in the period ahead.

that most suppliers would welcome the opportunity of working with buyers toward orderly scheduling of deliveries over a period of months in advance, and that such a policy would do much in the way of mitigating present shortages and insuring future supply. It would remove a great deal of the speculative element in trying to forecast future demand, and minimize speculative investment or commitments for materials by the purchaser.

that one of the great dangers in the present situation is the disruption of the distribution system. Among the examples cited is the direct solicitation by some manufacturers of business formerly handled through established distributors, attempting to convert this into "house accounts". Purchasing agents will do well to weigh such proposals with utmost care, making sure that apparent savings are actual advantages before committing themselves to a new channel of supply even though it involves no change in the goods bought.

that price resistance is a serious factor in consumer markets but so far is not a major factor in industrial buying; that price competition is not yet a basic policy in industrial marketing. This does not minimize the importance of cost economies, but they are more effectually sought in negotiation looking toward more efficient manufacture and better utilization of materials rather than in the cost of the materials themselves.

that the trend in selling today is toward more intensive cultivation of the potential sales field—more manpower, smaller territories, more frequent calls, greater specialization. This offers the purchasing agent an opportunity for closer contacts and better service.

Tire serviceman checks and matches trailer tires to insure getting maximum trouble-free mileage.



PURCHASING PROFITS EARNED THROUGH

Selection and purchase with consideration of re-use values saves company dollars

WE HAVE LEARNED a lesson about values in purchasing—that secondary or re-use life of a product is just as important a purchase cost factor as first-run life. That lesson was brought home to us very forcibly during the war years, when it was impossible in many instances to buy replacements. We had to make what we had last. We revamped our policies on maintenance and re-use of equipment, and kept records of the costs and results. That experience showed us that the really big gains in value are frequently realized in the secondary usage of the things we buy.

Recapping Tires

Our truck fleet contains about 80 units. Fifty of these are off-the-

highway and regulation logging trucks. The large off-the-highway trucks have 10-foot bunks and are used only on our own private logging roads. These big trucks use 10 driver tires (1200 x 24) and 8 trailer tires (1100 x 20). These tires cost us, new, from \$160 to \$193, not including the tubes. The last two dozen tubes we purchased averaged \$17.89 each.

Before the war, we bought our tires, put them on, and ran them until failures demanded junking. This was wasteful purchasing and faulty maintenance. Today we recap every tire that has a good carcass. Each tire is branded when we buy it, for identification and record purposes. This number carries through until the carcass is finally junked after several retread jobs. On a 1200 x 24, recapping costs us \$39.60. On a 1100 x 20, it costs us \$27.05.

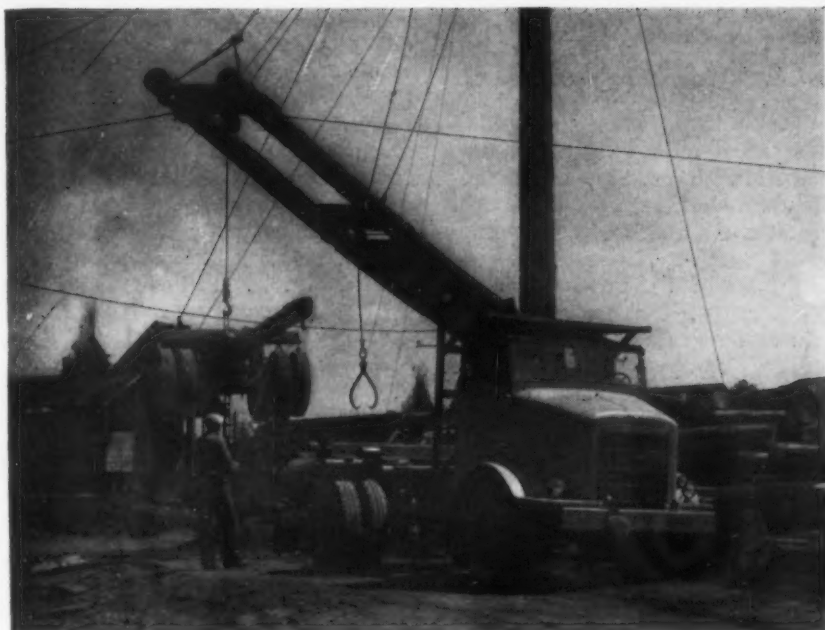
Mileage is figured on a board foot basis. There is such a great variation in tire life between different camps and different logging operations, that no life chart on a strictly mileage basis will give anything like an accurate performance record for

comparison. However, we have found that, starting with the right type of tire, we get just as much mileage from the first and second recap as we do from the new tire for its first-run life. For the average off-the-highway tire, we find that we get a threefold tire life for a cost of \$271 (Original cost \$192, plus two recappings at \$39.50 each). Thus by purchasing only the heavy duty logging type tire and having it recapped before the original tread is completely worn away, and considered for two recaps, we have brought down our average life tire cost to around \$90, a saving of more than half.

Standard Policy

For our on-the-highway logging trucks we have standardized since the war on a G. I. 6x6, which uses an 825 x 25 tire. The same recap policy is followed on this equipment, and we are able to get an even greater total life from these tires because of less road wear.

In handling our tire purchasing program and the recapping, we have found it profitable to place all of our business with one firm that special-



Wire rope is a major item. 800 feet of car line, 1600 feet of haul-back line, and 350 feet of main line are required to handle this loading operation.

Coos Bay, Oregon, is the largest lumber shipping port in the world. Mr. Pollock's company operates two large saw mills, two plywood and Venetian blind plants, and a battery separator plant. Before coming with the Coos Bay Lumber Company, he was Purchasing Agent for the Pacific Spruce Company and spent several years in the mill supply business.

SECOND USE LIFE OF PRODUCTS

● **By C. E. Pollock**

Purchasing Agent
Coos Bay Lumber Company
Coos Bay, Oregon

izes in handling logging fleet work. By concentrating all of the business with one firm, we get all of our trucks serviced no matter where they are, without extra charge. Nor is there a charge for the regular tire inspections which are made and a report filed with the purchasing department by individual tire numbers. A tire serviceman passes on each tire carcass before it goes in for recapping. We are also given a report on this.

Besides the above, the other units of our fleet include pickups, crew buses, water wagons, dump trucks, lift trucks, lumber carriers, and wheeled tractors. Tires on these range in size from the average passenger car tire to 1100 x 20s.

We follow the same purchase and recapping policy for these as for the heavy logging units. And because we are buying only the type of tires particularly recommended for the job, and then following through on recapping, we are gaining at least two full tire lives with only the additional cost of the recapping.

Another instance in which the secondary life of the product is an



All new tires are numbered and branded when purchased.

important factor is our purchase and use of wire rope. Because of difficulty in securing replacements, we were forced to recondition all wire rope lines when they were retired from machine use, and put them to work a second time in the logging camps or at loading dumps. In order to get the maximum re-use of such lines, the purchasing department is working very closely with the operating departments. We make up a yearly wire rope record, showing lengths, type of construction, original job life, and re-use life. Copies of this record are available to all operation superintendents. It has revealed some very valuable information.

Wire Rope Purchases

Wire rope purchases are a considerable item in this company. Take the 1946 purchases for just one of our logging operations, at Coal Creek. We bought the following:

<i>Main lines and loaders. 1 1/4"</i>	
6 x 19, preformed, HC & WC	\$1,549.68
<i>Haulbacks. 3/4", 6x19, pre-</i>	
formed, HC & WC	1,970.34
<i>Straw lines. 1/4" to 3/8", 6x19,</i>	
Plow, HC	378.58
<i>Arch lines. 1 1/8", 6x19, IPS,</i>	
WC, preformed,	3,918.63
<i>Choker lines. 1 1/8" 6x25, filler</i>	
const., preformed	2,328.12
<i>Ditto, for Cats. 1 1/8" to 7/8",</i>	
6x25, filler const., preformed,	1,759.99

<i>Tong lines. 1 1/8", 6x25, filler,</i>	
IPS, WC, preformed	519.03
<i>Dozer lines. 9/16", 6x25, Lang</i>	
Lay, WC, preformed	395.00
<i>Other lines</i>	181.97
TOTAL COST	\$10,001.34

For the four logging operations, our total wire rope purchases for 1946 amounted to \$47,512.07, for approximately 160,000 feet of lines from 3/8" to 2".

The bulk of the rope purchased was preformed. Our experience has taught us that in most cases we get from 25% to 50% more original life from this type rope than from the ordinary construction, at an additional cost of between 10% and 15% on the preformed. This in itself gives us a substantial saving on the original use.

But this is not the big saving. The preformed gives us much better safe second use or re-use life. The broken surface wires do not jagger. A worn preformed rope is safe for workmen to handle, and it is also an easier rope to handle. So, just as in the case of tires, by purchasing a type of rope that gives us the second and third use advantage to be figured into the total value we receive, we are able to make a substantial cut in our over-all rope cost.

Steel Products

The same policy is used in purchasing steel products, which are

used more extensively in the different mills and plants than in the woods. The first job is to determine the proper alloy for the various applications, and then be sure that the selection takes the re-use factor into consideration.

Products coming under this category include bar steel, plates, shapes, angles, I-beams, etc. Take bar steel as an example. In the main, this is used for hooks and pins where shock is a more important factor than wear, even in gaining a second life. We have found that for our use the molybdenum alloys give us a combined toughness and resistance to abrasion that is not found in the ordinary high carbon steel. By standardizing on this superior material, we have again found savings—not in the first cost, but in the greater life and the labor savings in making replacements, and in the gain on re-use.

To say that "we have learned a lesson" does not quite tell all the story. It would be better to say that we *are learning* a lesson in purchasing. Because each quarer, with the study of the performance reports, we are finding where we can gain additional life for our tires, wire rope, steel products, and other equipment. Purchasing with an eye on the re-use factor is paying good dividends for us.

Wire rope drums on a loading donkey. When these lines are retired from machine use, they go to the camps for a second and third life on other jobs.



A-frame being welded to a logging truck. It is made of 2 1/2" angle iron and 4" channel that has already served other uses before coming to shop maintenance.



ELIMINATE THE HAZARD BEFORE IT MEETS THE EYE



A wide variety of protective equipment is available to minimize the hazards of eye injuries in industrial plants. The proper selection involves consideration of the worker's comfort and convenience and protection against specific hazards

● **By Charles N. Parkes**

FIVE THOUSAND of the 75,000 eye injuries that occur annually are of a permanent nature. The most recent available statistics compiled by the National Safety Council on the amount of compensation involved in such injuries are based on the reports of state industrial commissions or state labor departments in seven states, for a representative prewar year (1938). The states covered are: New York, New Jersey, Pennsylvania, Maryland, West Virginia, Illinois, and Wisconsin.

The cumulative figures in this survey reveal that 8,982 cases of eye injury were reported. Of these, 7,278, were of temporary nature, and 1,693 resulted in permanent partial injury. The average amount of compensation was \$28 in the case of temporary injuries, and \$1,596 in the case of permanent partial in-

juries. The average compensation for all cases amounted to \$328. These figures do not include the countless number of "First Aid" cases in which there was no compensation involved.

The purchasing agent who knows what protective devices are available, and who knows about their use and specific application, can play a large part in reducing eye injuries.

Development of Eye Protection

The development of protective eye coverings, and the increase in their use, have been natural accompaniments of industrial growth and progress. In the early days of heavy industry, it was noted that men in hazardous occupations who wore corrective glasses had a far lower frequency rate of eye injuries than their more fortunate brothers who enjoyed good natural vision.

This observation prompted the earliest form of simple protective spectacles. Starting with this one style, the industry has developed more than two hundred variations of safety glasses. Protection was designed to meet specific hazards, rather than merely the general hazard, until the goggles of yesteryear are today as outmoded as the horse and buggy. The path of progress was not without its detours as the industry itself had to learn about the proper materials and designs. In an attempt to produce low-priced items, lenses were made of mica, celluloid, and even of imperfect glass; the ensuing result was a narrow range of vision, and distortion of vision that caused considerable wear and tear on the eyes.

By 1915, practical safety glasses were manufactured in fair volume. Users were able to purchase them



One-piece plastic goggle affording wide vision, worn with comfort over corrective lenses.



Colored lenses prevent the passage of injurious light rays.

with ventilated side shields of metal or leather. The eye-cup goggle was also in existence. Lenses were obtainable in amber and smoky colors for protection against glare, and in cobalt blue for steel workers.

Eye protection for welders consisted of the insertion of from two to five thicknesses of glass in their helmets, in combinations of red, green, and blue. The usual combination was one green and one red lens to secure vision as well as protection. One clear unhardened cover lens, to save the more expensive colored glass from pitting, covered the combination.

The early welder's helmet was made of sheet metal. The resultant discomfort caused by the weight and high heat conductivity sent this model into the discard. Subsequent-

ly some shields appeared fabricated from thin boards. The objection to this type was the lack of durability. Finally the model of pressed fibre-board was evolved, which was the fore-runner of today's efficient helmets and shields.

Even with the rapid development of safety devices, there are no machines or processes that assure absolute safety at the source of operation. It is impossible to remove the human element of carelessness. Coupled with these facts, the eye is the most delicate part of the body that is exposed. Protective eye coverings were devised for that set of circumstances.

Protective Spectacles

The basic type of protection is the spectacle type safety glass. In

woodworking, light spotwelding, and all frontal operations where the hazard of impact is negligible, spectacles with unhardened lenses may be used. Lenses may be curved if desired and are available in clip-on style to be worn with corrective glasses.

As the danger of impact increases, hardened lenses are indicated. Hardened lenses are uniformly heat treated and checked for identical stress distribution. They are also checked for drop impact and distortion.

Where there is a possibility of low infiltration of ultra-violet rays, infra-red rays, or an element of reflected glare, the lenses usually furnished are the polarized green shade. The polarized lenses may be protected from frontal sparks if necessary by super-imposing a clear cover lens.

In occupations where dust and fine particles filter down in back of the lens, a protective leather bridge curtain may be specified.

If danger of lateral impact is present, all of the types mentioned may be secured with side shields. Shielded spectacles are especially desirable under heavy shop conditions in operations requiring more than one worker, or where adjacent operations present a hazard. They are indispensable for work in proximity to welding. This type of protection is also widely used by stone-cutters and machinists where the work is partially lateral.

Side shields are available in leather, wire mesh, or plastic. Each has individual advantages. Leather is pliable and protects from flash or glare. Wire mesh protects against dust, foreign bodies, and affords some reinforcement to impact. The plastic is desirable for workers near swinging loads and where a wider range of vision is required.

These models may also be secured with plastic lenses. They are light weight, and fogging is slower than in glass.

The glass lenses for spectacles and goggles are obtainable in a number of shades, manufactured in accordance with Federal specifications. The three shades most commonly used are light, medium, and dark.

In this classification, the light shade transmits only 18.1% of the infra-red rays and 1% of the ultra-violet rays, along with 64.5% of the non-injurious rays of the visible spectrum. The medium shade transmits only 51.6% of the non-injurious visible rays, but eliminates the

ultra-violet rays altogether and cuts down the infra-red rays to 7.7%. The dark shade transmits only 31.3% of the non-injurious rays, but further reduces the transmission of infra-red rays to 1.7%.

Specialized lenses are available for specialized trades. Six shades of cobalt blue, ranging in percentage of light transmission from 0.66% to 0.112% are indicated for melters and furnacemen. Where underfoot vision is a factor, these spectacles are manufactured in bi-colored models: half blue and half clear; two-thirds blue and one-third clear; and one-third blue and two-thirds clear. The specific conditions in a given operation will indicate the logical model to select for most satisfactory use.

For conditions of bright yellow glare and entire absence of ultra-violet and infra-red rays, didymium glass lenses may be used. These lenses are pink in color, with a tinge of amethyst. They are not to be used where any injurious rays are encountered.

Where the only factor to be considered is a slight reflected glare, amber lenses are furnished in light, medium, or dark shades. These, too, are not to be used if injurious rays are present.

Corrective Protection

It is estimated that more than half of the workers in industry are

in need of corrective eye treatment. More than 90% of the workers with faulty vision can have it corrected. Prior to 1917, the precaution was either protection without correction, or arbitrary protection. As employment became more selective, and through the past decade when labor was at a premium, the trend toward corrective-protective lenses made large gains.

For ordinary operations, with hazards below normal, protection superimposed over corrective spectacles will usually suffice. But for highly hazardous or very close work, a corrective lens incorporated as an integral part of the protection may be indicated for workers with faulty vision.

There is a wide variation in different industries as to methods used in providing corrective protection. The size of the plants and local factors will in many instances be the determining factor. Under one plan the employee bears the entire cost of corrective safety glasses. An alternative plan is that the cost of examination and prescription is paid by the employee. Still another plan provides corrective protection and replacements after two years.

In some organizations the entire work from examination to delivery is accomplished within the plant. Where it is more expedient, the examination and prescription is

done by a specified eye specialist. If employees are given the right to go to a specialist of their own choosing, care should be exercised that the doctor is well informed on industrial hazards and industrial codes. He should know the conditions involved on particular operations.

In no circumstance should prescriptions for off-the-job spectacles be duplicated for occupational glasses without examination.

All spectacles, corrective or protective, should be designed for easy cleaning and sterilization. Other requisites are that they should be corrosion resistant, non-irritant, and should not discolor the skin.

Protective Goggles

In the more hazardous occupations such as heavy grinding, chipping, machining, and the handling of molten metals, the eye-cup goggle comes to the fore. The goggle should have enough width to afford ample protection for the eye socket. They should cushion contact shock over as wide an area of facial bones as practicable.

The goggle should be flame-proof, corrosion resistant, and non-irritant. Specify as large a lens as practical to assure a good range of vision. The minimum permissible size for a round lens is 50 mm. The oval lens has a minimum specification of 48 mm. by 44.5 mm. A close

Face shields are well adapted to provide protection in a variety of industrial operations.



A combination of clear and colored lenses is often desirable.





Hinged goggles provide added convenience in that they can be raised for inspection of the weld.

fit is desirable, allowing enough clearance for eyelashes.

All the lenses used in the spectacle types are available in goggles. The hardened lens is widely used. The Federal specifications on the strength of a lens provide by test for impact of a 22 mm. steel ball dropped from the height of 127 cm. This is doubly checked, the lens supported by the goggle cup, and again by a gasket on a hollow tube. A lens should break rather than be driven through the goggle cup. The break should be radial from the point of impact. If a break is concentric it may indicate faulty heat treatment. A later test has however shown that certain glass may be drilled off the center of the lens without causing radial breaks.

The word "hardness" as used in this application may be confusing. There are different interpretations within the industry. An early definition was resistance to scratching. Another explanation is the degree of fusibility. For industrial use as applied to safety glasses, the most logical explanation seems to be "the elastic limit of a flat surface in contact with a spherical surface."

Hardened corrective lenses are available for goggles. If protective goggles are used over corrective spectacles, check that the depth of the eye-cup is not excessive so as to create a hazard on this score.

Eye-cups are furnished in plastics, compositions, metal, and rubber. Indirect ventilation of the goggle may be specified if working in dust. For use under conditions



Fibre helmets are standard equipment for heavy welding operations.

of excessive heat, specify goggles that provide a maximum of ventilation. For strength, metallic ventilation rings are preferable unless scarcity of raw materials causes substitutions of plastics. Replacement of damaged lenses is accomplished by a screw-on design or snap-in.

There is a rubber, mask-type goggle for workers subject to danger from splash. This style is indispensable for chemical workers. Lenses may be obtained in round, oval, and triangular shapes. The triangular shaped lenses resemble those embodied in the everyday har-

lequin spectacles. They provide an excellent range of vision.

For work that carried only a dust hazard, a light weight, leather, mask-type goggle with unhardened lenses is sufficient. The eye-cups may be bound in chenille for added comfort.

One unique type of goggle provides two specific safeguards for two distinct hazards, so that both acetylene welding and chipping or grinding may be done without changing goggles. A hardened safety lens guards against impact. The welding lens hinges over the impact

lens. This protection is designed to be worn over correctives if required. They can greatly speed up production where the operation requires a constant change of goggles.

Welding goggles, with the exception of the lenses, follow the same pattern as the goggles mentioned. They are designed to prevent the entrance of injurious rays. Corrective glasses may be worn under them. The utility of such goggles as a safeguard for welding hazards places them somewhere in between the spectacle and the heavy duty shields and helmets.

Covers for welding lenses are practical as an economy measure. Cover lenses are furnished in plain glass, precoated glass that resists pitting, and plastic that is also highly resistant.

United States Federal Specifica-

terials has permitted many applications of modern functional design in eye protection equipment. One example of this is the one-piece model illustrated. The total weight is less than two ounces, and furnishes the answer for those employees who protest about the discomfort of heavy safety glasses—provided, of course, it is compatible with the work they are doing. This plastic goggle may be ordered in clear or green lens, and can be worn over corrective lenses without discomfort. It is recommended by many railroads because of the wide range of vision, coupled with adequate safety factors. This plastic has a high degree of resistance to velocity impact. The quality of low heat transmission retards fogging.

Plastic lenses are subjected to the same test for breakage as glass

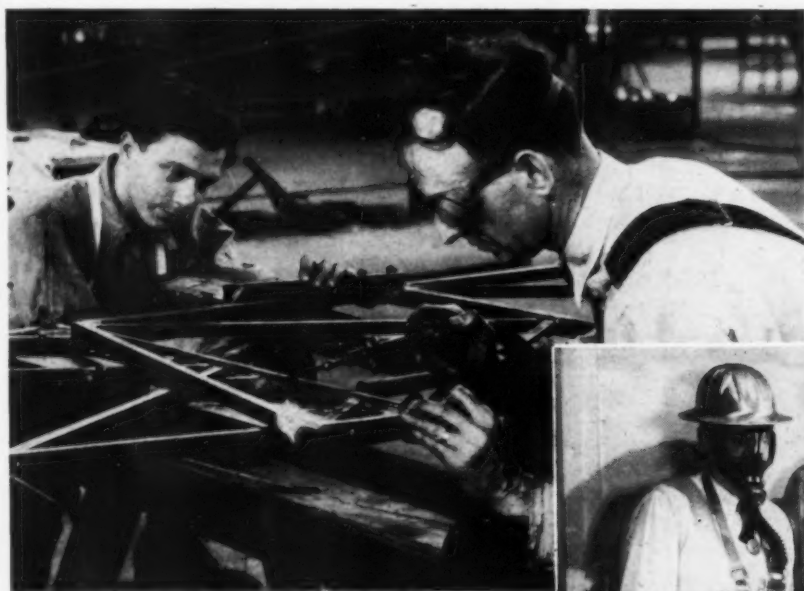
lenses. In the breakage test, plastic has proved as good as glass, and above the minimum requirements at room temperatures. Both withstand a 50-inch drop in a drop needle test. Temperature changes do not affect glass. The plastic is affected by a change in temperature, but not enough to hamper its efficiency. A temperature change will affect the plastic more readily after it has been in use for some time than when it is new.

Both materials withstand abrasion equally well. Because of lower heat conductivity, plastic is safer where there is danger of splatter and thermal shock.

For many operations, plastic lenses provide comparable safety with greater comfort and wider range of vision. Their lightness and compactness is an asset, for workers are not prone to remove them. One model folds into a case the size of an ordinary cigarette package.

Glass and plastic lenses both have their place in the protective field. Analysis of the specific work and the working conditions for which protection is required will point the way for proper selection.

A feather-weight spectacle-type plastic shield provides adequate pro-



The helper's safety should be considered as well as that of the operator.

tions govern the manufacture of welding lenses and welding glass for shields and helmets. In these specifications, the shade of the lens is defined in terms of the transmission percentage for infra-red and ultra-violet rays and non-injurious visible rays. The most frequently used shades are listed in the accompanying table, with their transmission characteristics and recommended uses. Most of these shades can be secured in hardened glass if impact hazard is present in addition to ray transmission.

The development of plastic ma-



Safety equipment should be selected with reference to the particular hazards involved.

MOST FREQUENTLY USED SHADES OF WELDING GLASS

as defined in U. S. Federal Specifications

SHADE	TRANSMISSION PERCENTAGE			RECOMMENDED USES
	Infra-Red Rays	Ultra-Violet Rays	Non-injurious Visible	
# 3	Less than 1%	Less than 1%	13.9%	Protection against reflected glare. Light brazing, spot welding, lead burning, weld observation, work involving low heat.
# 4	0.1%	Less than 1%	5.18%	Light acetylene welding, burning, cutting in dark places, smelting furnace work.
# 5	0.05%	0	1.93%	Burning, spot welding, acetylene welding, cutting.
# 6	0	0	0.72%	General acetylene welding, electric welding to 30 amps., welder's helper and linesman.
# 8	0	0	0.1%	Heavy acetylene welding, electric welding to 30 amps.
# 10	0	0	0.014%	Electric welding up to 250 amps.
# 12	0	0	0.0019%	Same uses as #10; also atomic hydrogen welding.
# 14	0	0	0.00027%	Carbon arc welding, high amperage electric welding, atomic hydrogen welding.

tection for light grinding, wood-working, inspection, and even for light spot welding. The shield can be worn over corrective spectacles and fitted with green lenses for reflective glare. The contour of the shield follows the natural curvature of the face. If more facial coverage is desired, the shields may be obtained in visor-type models, with the plastic extending 4" to 8". The visor can be moved up and away from the face on swivel points. There is no element of fogging. Such shields, however, should not be used where there is danger of severe impact, and they are adapted

only to the lighter type of welding operations.

Regular welding protection for continuous or heavy work is accomplished with handshields or helmets. For intermittent heavy welding, the handshield will suffice. The construction is usually of heavy fibre, fitted with glass holders of composition or metal. The handle should be designed for a solid, easy grip. The shield must be large enough to cover the face and throat.

In continuous welding, a helmet is required for protection. The helmet should allow of easy raising for weld inspection. Headbands

should be comfortable and easy to adjust. The welding glass that fits into the helmet is furnished in the same range of shades as welding lenses for goggles. The welding glass may be protected with a plain glass cover. A more practical cover is precoated by the manufacturer to inure it against pitting. The life of pretreated glass is far longer, and makes it well worth the extra cost. Where there is an additional danger of swinging loads or overhead hazards, a safety hat may be embodied in the design of welding helmets.

Welding on zinc or galvanized iron has long been an industrial bugaboo, because of the fumes generated in this process. Constant inhalation of these fumes can produce distressing sickness, as any welder will testify. Welding on this type of work often entails bonus payments or staggering of the work. To offset these conditions, helmets may be obtained that are equipped with an air hose.

Other helmets equipped with air lines are acid hoods, and those for use where work is accomplished under conditions of high humidity. Acid hoods may be obtained in soft rubber or rubberized fabrics. The window may be of glass or plastic.

The assumption that eye injuries are a natural complement of certain industrial operations is a fallacy. As early as 1930, in a study by the National Safety Council and the Society for Prevention of Blindness, covering 583 industrial plants, an estimated 10,000 eyes were saved by safety glasses in two years. The figures were based on broken and damaged eye protective equipment. The value of the eyes saved based on compensation rates in that period would have been \$46,000,000.

By proper safety practices and equipment, this hazard is decreasing, but it is far from the vanishing point. Convince yourself by securing a breakdown of eye injuries in your own plant. Secure a report that shows the percentage of eye injuries to total injuries and their severity rate. The cause of the injuries will show whether protective glasses were worn and if the right kind was available.

Buy comfortable protection for the specific work on which it will be worn. Buy them as carefully as you do the raw materials that go into your product. If your plant has a safety engineer, form a two man gang.

After the protection is furnished, make it easy for the worker to get it. An eye protection that is not worn is no protection.

PRODUCT DELIVERY INFORMATION

While there has been no major change in delivery time of materials and equipment as a whole covered by this report, manufacturers in many lines are reporting "stock" or "immediate" delivery for a growing list of standard products. This ties in with the current report that industrial purchasing agents are tightening up on the quality factor and withdrawing waivers of quality specifications.

On the other hand there has been little or no change in the previously indicated long lead time on fasteners, material handling equipment, fittings, electrical equipment and other products.

Purchasing, production and planning departments, and also the sales department will find this data of practical value for it is not only a guide to determining minimum inventory and ordering time under present conditions, but it also indicates the need for obtaining specific information from vendors as to actual delivery time in order that production and sales may be geared accordingly.

Especial attention is called to the fact that the indicated delivery time in many instances is the range of delivery reported by several manufacturers.

DELIVERY TIME

Standard Products	Special Order
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AIR COOLED ENGINES	
10 months	15 months
AIR EQUIPMENT	
<i>Compressors, Below 30#</i>	
2 weeks	2 months
<i>Pumps, Vacuum</i>	
2 weeks	2 months
ALUMINUM	
<i>Sheet & Coil Products</i>	
3 to 4 weeks	4 to 5 weeks
<i>Extrusions</i>	
4 to 6 weeks	4 to 6 weeks
<i>Rod and Bar</i>	
2 to 4 weeks	3 to 5 weeks
AUTOMATIC CONTROLS	
Immediate — 3 weeks	1 to 6 months
BEARINGS	
<i>Ball Bearings</i>	
3 to 4 months	4 to 6 months
<i>Bearings, Roller</i>	
3 to 4 months	3 to 6 months
<i>Bearings, Bronze</i>	
Stock	12 to 14 weeks, depending upon type and quantity. 10 to 24 weeks, depending upon type and size.
<i>Pillow Blocks</i>	
9 months	12 months
BELTING	
<i>Leather</i>	
2 weeks	3 weeks
<i>Transmission Belting</i>	
Stock to 16 weeks	3 months
<i>Flat Transmission, Rubber</i>	
Stock to 2 months	4 months
<i>V-Belts, Rubber</i>	
Stock	12 weeks
BRASS RODS	
Stock-30 days	30 days
<i>Brass Strip (gauges over .016)</i>	
2 to 3 weeks	— —
BRONZE PARTS	
<i>Extruded Bronzes</i>	
2 to 3 weeks	3 to 4 weeks
<i>Heavy Bronze Castings</i>	
2 to 3 weeks	3 to 5 weeks
<i>Light Bronze Castings</i>	
2 to 3 weeks	3 to 4 weeks
<i>Medium Bronze Castings</i>	
1 to 2 weeks	2 to 3 weeks
BRUSHES	
<i>Power Driven</i>	
1 to 3 weeks	4 to 8 weeks
<i>Maintenance Brushes</i>	
1 to 2 weeks	4 to 8 weeks

DELIVERY TIME

Standard Products	Special Order
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CHAIN	
<i>Steel</i>	
2 to 7 months	2 to 7 months
<i>Malleable Iron Chain</i>	
10 to 30 months	14 to 36 months
<i>Machine Finished Roller</i>	
18 to 24 months	— —
CHEMICALS	
<i>Carbolic Acid</i>	
Tight: Annual production committed under contract. Shipments restricted to customers' monthly quotas.	
<i>Nitric Acid — Sulphuric Acid</i>	
* * Same	
* * One company reports that shortage of carboys has hampered deliveries, rather than acid shortage.	
<i>Formaldehyde</i>	
Very short supply. Cannot accept additional orders.	
<i>Chemical Process Equipment</i>	
12 months	16 months
CLEANERS	
<i>Metal</i>	
10 days	— —
<i>Parts Cleaners</i>	
10 to 30 days	8 to 12 weeks
COATING EQUIPMENT, INDUSTRIAL	
<i>Baking Ovens</i>	
6 weeks	10 to 24 weeks
<i>Booths, Spray Painting</i>	
6 to 16 weeks	12 to 16 weeks
<i>Paint Spraying Equipment</i>	
12 weeks	24 weeks
CONTAINERS	
<i>Bags, Paper</i>	
30 - 60 days	60 - 90 days (also, spl. orders not accepted)
<i>Boxes, Corrugated</i>	
— —	3 to 4 months
Current reports indicate that corrugated cartons are more abundant, and that immediate deliveries can be made in standard sizes of cartons by some companies. Price drops of 10% to 15% for cartons have also been reported.	
<i>Boxes, Solid Fibre</i>	
8 weeks	Spl. orders not accepted
<i>Boxes, Fibre, Cleated</i>	
12 weeks	2 to 5 months (also, spl. orders not accepted)
<i>Boxes, Paper, Folding</i>	
Prompt	6 months
<i>Cleated Plywood, Shook</i>	
8 weeks	6 weeks
<i>Boxes, Wirebound</i>	
— —	10 days
<i>Boxes, Wooden</i>	
— —	2 months

DELIVERY TIME	
Standard Products	Special Order

— —	<i>Crates, Wirebound</i>	12 to 15 days
— —	<i>Crates, Wooden</i>	2 months
2 to 3 days	<i>Cooperage Slack</i>	2 to 3 weeks
1 week	<i>Nail Kegs</i>	2 weeks
1 week	<i>Half Barrels</i>	2 weeks
2 to 4 weeks	<i>Cooperage, Tight</i>	12 weeks

CONDENSER APRONS

— —	<i>Chrome</i>	30 days
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ELECTRICAL

4 to 9 months	<i>Cables, Wire</i>	4 to 9 months
4 to 5 months	<i>Cable, Insulated</i>	4 to 5 months
1 to 3 months	<i>Cables and Wire</i>	5 to 6 months
20 weeks	<i>Bare Copper Wire</i>	20 weeks
20 weeks	<i>Weatherproof</i>	20 weeks
4-6 weeks	<i>Wire, Insulated</i>	6-8 weeks
3 months	<i>Wiring Devices</i>	6 to 8 months
1 to 5 months	<i>Conduits, Flexible</i>	1½ to 6 months
60 days	<i>Raceway-Fittings</i>	90 days
— —	<i>Generators</i>	8 to 10 months
3 months	<i>Motors, Polyphase</i> 1 - 15 hp	7 months
4 months	20 to 75 hp	10 months
62 weeks	Up to 200 hp	
	Fractional hp	
	All-fractional except aircraft—2 years	

SWITCH GEAR

	Breakers	Air	Oil
Up to 2.3 K.V.	45 weeks	45 weeks	45 weeks
2.3 to 6.6 KV	85 weeks	45 weeks	45 weeks
Over 6.6 KV	85 weeks	85 weeks	85 weeks

Capacitors

Up to 180 days, depending on rating of units desired in series parallel combination.

Transformers (Distribution)

1½ to 50 KVA — on allotment
75 to 100 KVA — 12 to 15 months
100 to 500 KVA — 15 to 18 months

(Power)

66 to 5000 KVA — 15 to 18 months
5000 KVA and over — 2 years

GASOLINE ENGINES

10 to 12 months	<i>Air-Cooled</i>	— —
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FASTENERS

6 months	<i>Bolts, ⅝" and under</i>	6 months
1 month	<i>Bolts, Larger</i>	2 months
10 to 12 months	<i>Bolts, Stove</i>	
Stock	<i>Nuts, Self-Locking</i>	Semi-Std. 45-75 days Specials 60 to 120 days

DELIVERY TIME	
Standard Products	Special Order

12 to 16 months	<i>Nuts, M/Scs Size</i>	
6 to 12 months	<i>Nuts, Bolt Sizes</i>	— —
12 to 14 months	<i>Machine Screw Nuts</i>	— —
90 days	<i>Semi-Finish Nuts</i>	90 days
3 months	<i>Cap Screws</i>	3 months
8 to 10 months	<i>Machine Screws</i>	8-10 months
— —	<i>Milled Specials</i>	2 to 3 months
	<i>Headed Specials</i>	5 months

6 to 12 months	<i>Phillips Recessed Head</i>	
10 to 12 months	<i>Sheet Metal Screws</i>	— —
4 to 8 months	<i>Self Tapping Screws</i>	
Stock to 2 weeks	<i>Socket Head Cap Screws</i>	1 to 4 weeks
1 to 2 months	<i>Headless Set Screws</i>	— —
Stock to 3 weeks	<i>Socket Head Set Screws</i>	1 to 4 weeks
6 to 7 months	<i>Square Head Set Screws</i>	— —
Stock to 2 weeks	<i>Socket Screw Keys</i>	1 to 3 weeks
3 months	<i>Rivets</i>	4 months
20 to 30 days	<i>Washers, Flat</i>	15 to 20 days
5 to 6 months	<i>Wood Screws</i>	5 to 7 months

FELT PRODUCTS

2-3 weeks	3-4 weeks
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FITTINGS

3 to 12 months	<i>Brass, Bronze</i>	— —
Stock to 60 days	<i>Copper or Bronze</i> <i>Fittings, Solder Type</i>	
Stock to 2 months	<i>Tube Fittings</i>	2 to 4 months
Small quantities	<i>Malleable Iron</i>	Stock to 60 days
Large quantities	6 months	
60 to 90 days	<i>Stainless Steel Fittings</i>	90 to 120 days
Stock to 60 days	<i>Steel Tube Fittings</i>	2 to 4 months
Stock to 2 weeks	<i>Pipe Plugs</i>	1 to 3 weeks

FORGINGS

— —	<i>Brass or Aluminum</i>	3 to 4 weeks
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FURNACES

4 to 10 weeks	<i>Heat Treating</i>	8 to 32 weeks
4 to 10 weeks	<i>Ovens, Industrial</i>	10 to 16 weeks
— —	<i>Metal Fabrication</i>	2 to 6 weeks

GAUGES

Immediate to 30 days	<i>2" Pressure</i>	30 to 60 days
Immediate to 30 days	<i>2½" Pressure</i>	30 to 60 days
Immediate to 30 days	<i>2" Oxy-Acetylene</i>	30 to 60 days

DELIVERY TIME	
Standard Products	Special Order

Immediate to 30 days	2½" Oxy-acetylene	30 to 60 days
Immediate to 30 days	Vacuum Gauges	60 days
Immediate to 30 days	Compound Gauges	60 days

GEARS

2 to 8 weeks	Differentials	6 weeks to 10 mo.
— —		9 to 10 months

GRINDING WHEELS

— —	Vitrified	4 to 6 weeks
— —	Resinoid	4 weeks
(Finished stock, 2 to 4 days; semi-finished, 4 to 8 days)		

HOSE, FLEXIBLE, ASSEMBLIES

Stock to 2 weeks		30 to 90 days
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HOSE

Stock to 6 months	Molded, Braided (depending on size and construction)	
Stock to 6 weeks	Wrapped Hose (depending on size and construction)	

LEAD

2 to 3 weeks		4 to 6 weeks
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LIGHTING EQUIPMENT

4 to 6 months		8 to 12 months
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HORNS, HOWLERS, SIGNALS

10 to 20 days		30 days
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LUMBER

Stock	Creosoted	30 to 45 days
2 to 3 months	Fir	Unobtainable
Delayed Delivery	White Pine	
	Mills oversold	
2 months	Yellow Pine	
1 to 2 months	Cypress	Unobtainable

MAGNESIUM

4 weeks	Sheet	— —
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MATERIAL HANDLING EQUIPMENT

Stock to 4 weeks	Industrial Storage Batteries	
	Lead acid	6 to 12 weeks
1 to 4 months	Casters, Truck	5 to 6 months
4 months	Casters, Semi-Steel Plate	— —
3 months	Casters, Welded Steel Plate	
3 weeks	Assembly Conveyors, Belt	10 weeks
10 to 12 months	Conveyors, Belt	Indefinite
10 months	Conveyor Belting	10 months
16 to 32 weeks	Conveyor Belting, Rubber	6 to 9 months
6 weeks	Conveyors, Coal	12 weeks
2 weeks	Conveyors, Roller Gravity	6 weeks
	Light, Medium	
8 weeks	Conveyors, Sand, Gravel	12 weeks

DELIVERY TIME	
Standard Products	Special Order

6 weeks	Conveyors, Inclined Belt, Stationary, Horizontal	12 weeks
4 months	Elevators, Bucket	5 months
1 month	Elevators, Hand	4 to 6 months
6 to 9 months	Elevator Belting, Rubber	6 to 9 months
3 weeks	Elevators, Portable Hand	6 weeks
3 months	Elevators, Portable, Electric	6 months
2 months	Elevators, Electric	4 to 6 months
1 to 4 months	Elevators, Portable, Tiering	2 to 7 months
1 to 3 months	Trucks, Hand, 2 wheel	6 mos. — indefinite
Immediate to 30 days	Lift Trucks, Hand	30-60 days
30 days	Jack & Skid Systems	30 to 60 days

MOTORIZED LIFT TRUCKS

30 days	Stationary Platform	60-90 days
10 to 30 days	Low-lift Platform	30 to 60 days
10 to 30 days	Low-lift Pallet	30 to 60 days
10 to 30 days	Tin Plate	30 to 60 days
30 days	High-lift Platform	30 to 60 days
30 to 90 days	Tilting and non-tilting Fork	60 to 90 days
10 to 30 days	Tractor	30 to 60 days

POWER INDUSTRIAL TRUCKS

"Special truck. Delivery time will run 9-24 months."

2 to 3 months	Tractors, Gasoline Industrial	2 to 4 months
Stock	Tractors, Electric Industrial	5 months
6 to 12 weeks	Trailers, Factory Warehouse	10 to 24 weeks
1 to 8 months	Platform Trucks (Stake Trucks)	10 months
2 to 10 months	Lift Trucks, Electric (Platform)	8 to 12 months
6 months	Fork Lift Trucks, 3,000# cap.	8 months
30 to 60 days	Fork Truck, 2,000# cap.	90 days
6 months	Fork Truck, 4,000# cap.	8 months
8 months	Fork Truck, 6,000# cap.	10 months
5 months	Low Lift Platform, 6,000# cap.	7 months
8 to 10 months	Fork, 7,000 to 16,000#	10 to 12 months
5 to 7 months	Baggage Trucks	7 to 9 months
4 to 8 months	Crane Trucks	6 to 10 months
90 days	Dump Truck, Gasoline	90 days
30 days	Shovels, Gasoline	90 days

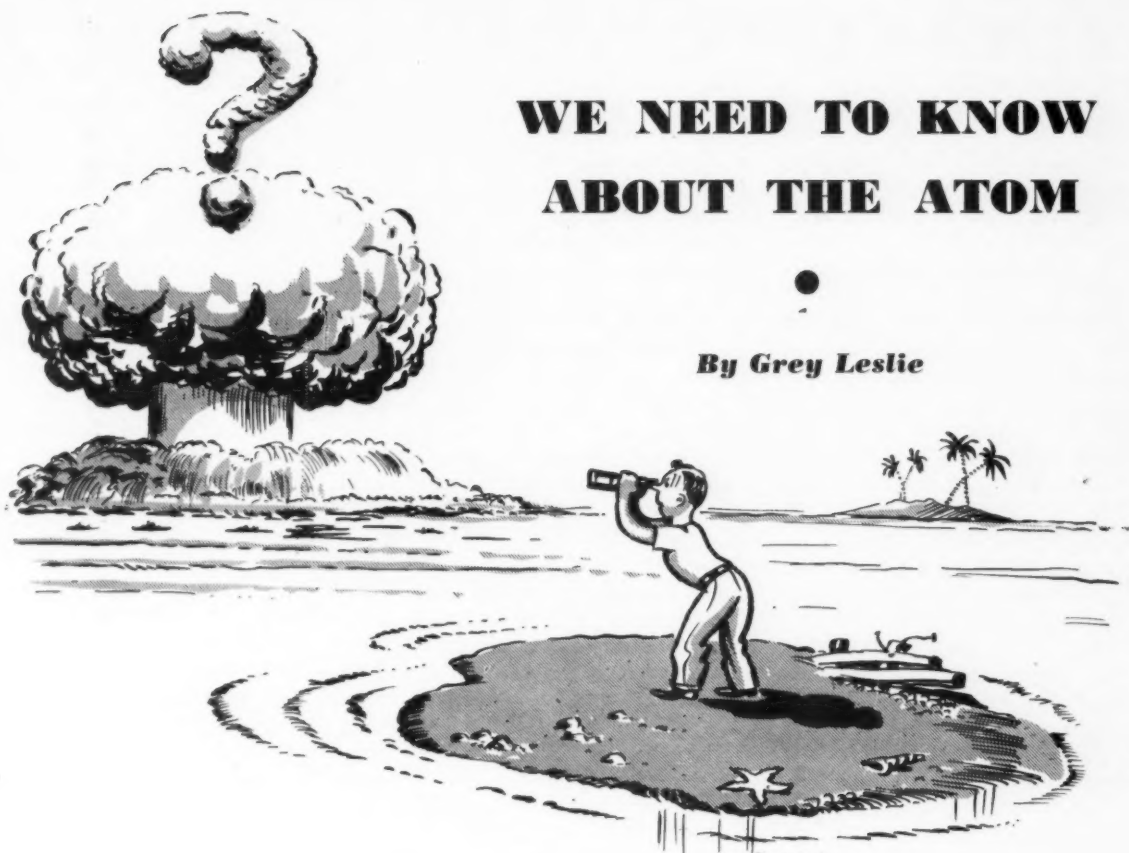
PACKINGS

3 weeks	Leather	4 weeks
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DELIVERY TIME	
Standard Products	Special Order
2 weeks	Oil Seals 12 weeks
ALSO SEE RUBBER PARTS	
PIPE	
1 to 2 weeks	Brass — —
1 month	Pipe, Fabricated Carload, 3 to 4 mo. LCL, 6 to 8 weeks
3 to 12 months	Copper Pipe (depending on supply of copper from refineries). Tube mill production is very uncertain.
PIPING	
— —	Exhausts and Blow 1 to 3 months
3 months	Steel, Welded, Riveted Indefinite
PLASTICS	
	Mold Delivery, 8 to 20 weeks Parts Delivery, 4 to 6 weeks
PUMPS	
4 to 6 weeks	Centrifugal 12 to 14 weeks
No motor — 12 weeks	24 weeks
16 weeks	Power Pumps 24 weeks
24 weeks	Pumps, Hydraulic
4 weeks	Turbine 12 to 14 weeks
RUBBER PARTS, SYNTHETIC	
2 weeks	Extrusions 2 to 3 weeks
3 weeks	Molded Parts 3 to 6 weeks
— —	Die Cut Parts 2 to 3 days
2 weeks	Synthetic Rubber Sheets
2 weeks	Synthetic Rubber Rolls
SCALES	
3 to 4 months	Platform, Portable 6 to 12 months
2 to 8 months	Truck, Wagon 6 to 11 months
SCREW MACHINE PRODUCTS	
— —	3 to 4 weeks
— —	Brass, Aluminum, Steel 2 to 3 weeks
SPRINGS	
— —	Extension, Compression Torsion 45 to 60 days
— —	Spring Stampings 90 to 120 days
STEEL, CARBON	
5 months	7 months
SPEED REDUCERS	
8 weeks	10 to 14 weeks
SPROCKETS	
4 to 6 weeks	6 to 8 weeks

DELIVERY TIME	
Standard Products	Special Order
6 to 12 months	Cut Tooth Steel — —
8 to 15 months	Cut Tooth Cast Iron — —
TAPES	
2 weeks	Masking — —
Stock to 2 weeks	Electric 4 to 6 weeks
Stock to 2 weeks	Cloth Back 4 to 6 weeks
TEXTILE EQUIPMENT	
12 months	18 months
12 months	Textile Finishing Equipment 16 months
TIN	
10 days	2 to 3 weeks
Conservation Order	M-43 places limits on pig tin.
TOOLS	
1 to 2 weeks	Twist Drills 3 to 4 weeks
1 to 3 weeks	Reamers 4 to 5 weeks
TUBING	
4 weeks	Aluminum — —
2 to 3 weeks	Alloy — —
2 months	Stainless Seamless and Welded Tubes 4 months
VALVES	
Stock to 30 days	Brass — —
Stock to 30 days	Bronze — —
Stock to 60 days	Bronze, Solder Type or Threaded
Stock to 60 days	Valves, Iron 4 to 12 months
Stock to 120 days	Valves, Steel
1 week	Hypressure Jenny Steam Cleaner 4 to 6 weeks
Stock to 30 days	Valves, General 60 days
30 to 90 days	Stainless Steel 90 to 120 days
WIRE	
6 to 8 weeks	Card Wire 5 to 6 weeks
— —	Wire Forms 3 to 4 months
24 weeks	Constantan — —
20 weeks	Iron — —
10 weeks	Platinum — —
WIRE CLOTH	
10 months	Insect Screen Beyond 10 months
8 to 10 months	Copper, Bronze, Aluminum Standard Hardware Cloth 8 to 10 months
1 week to 3 mos.	Coarse Industrial Cloth 2 weeks to 3 mos.
4 to 7 months	Fine Industrial Cloth — Some immediate 4 to 7 months

PURCHASING



WE NEED TO KNOW ABOUT THE ATOM

By Grey Leslie

A SHORT time ago, Mr. David E. Lilienthal, Chairman of the United States Atomic Commission, answered some questions asked by a group of newspaper editors, as to how much the American people should know about the atom; how much they could understand, and who could best tell them. He is reported to have said he did not believe that "the facts and knowledge about the forces in the nucleus of the atom, and the human implications of that discovery, are matters beyond the understanding of the general public of the United States, including the children in the schools". He extended his answer by saying that he thought persons who could figure out the batting average of their favorite baseball hero would not find it too hard to learn all they needed to know about the atom and atomic energy; *and learning about it is the first step toward an intelligent national answer as to what to do about it!*

From the fateful day of its lethal debut at Hiroshima, over two years ago, there has been a veritable avalanche of books, articles and papers about the deadly potency of the atomic bomb. We have been

given dramatic spectacles, in print and picture, of a world in misery—bloody, maimed, devastated, and numbed with shock, pain, and mental anguish. Members of the scientific group which had most to do with the complicated structure of the bomb are variously reported as praying at times that their ghastly experiment might fail—so much were they frightened by its fearsome potentiality.

There can be little doubt that the success in making the bomb awakened an alarmed awareness that some of the products of the scientific laboratory, whether or not we realize it, can constitute a moral force that must be reckoned with, eventually, in all our calculations affecting our own lives and humanity at large. Graphic descriptions of the destructive power of the bomb continue to disturb us; some seem to be designed to haunt our sleep with dreadful dreams.

It is typical of the dilemma of our rapidly-paced civilization and our super-specialization, that millions of intelligent men humbly accept the fact of the obliterating force of the atomic bomb, but only a handful really understand its com-

position. To a small elite of physicists, it is as comprehensible as the elementary mathematical tables; to the average layman it is a staggering, death-dealing instrumentality of war and desolation.

In the past few months, some enterprising and far-sighted publishers seem to have sensed that there was, perhaps, a surfeit of the apocalyptic prophecies of complete annihilation by remote control. They have winnowed some rather clumsy speculations about atomic energy from an apparently inexhaustible supply. These pseudo-scientific effusions (written largely by dilettantes) suggest, for example, the imminence of blowing up the Polar ice barriers or air-cooling the Sahara; or week-end inter-planetary journeyings; or making rain or snow to order, or preventing both. Some few of them, to be sure, are based on genuine technical or scientific knowledge; some of them are extremely ingenious elaborations of scientific concepts developed to fantastic extremes. Some of them are first rate examples of craftsmanship in pure story-telling, and some of them are reasonably good reading entertainment. A rare few of them

approach the excellence of a Poe or a Wells or a Conan Doyle; none of them matches the old master, Jules Verne. One would be a presumptuous critic indeed, to deny that one generation's fantasies often have a most disconcerting way of becoming the next generation's facts.

But in this deadly serious business of the atomic bomb and atomic energy generally, it seems to me that it is of vital importance that we learn something about the atom *itself*; something of its history, its structure; how practical knowledge of it came about; and what can be done with it without destroying ourselves, or permitting others to destroy us with it.

There is hardly a single conversation or a discussion of any seriousness, where the topic of the atom or atomic energy does not somehow creep in. There seems to be no way to exclude it, no defense against it, no way to escape it. But even among some public men who have much to do with actual atomic legislation, ignorance of the elementary principles of atomic energy is astounding. Well educated laymen, whose opinions on public matters are valued and often solicited, retain almost ridiculous ideas concerning the origin, nature and secrets of atomic energy. Yet there is universal agreement that the future of all mankind is concerned with present decisions about this terrifying force. One notion persists, that the discovery of atomic energy was a phenomenon suddenly produced by a group of scientists who succeeded in "selling" a fantastic idea to a War President. They are believed to have coaxed him to secretly venture two billion dollars on the chance that they might produce a weapon potentially destructive, beyond the wildest nightmare of the imagination. They did! And for over two years, we have had a stream of literature, romantic and mysterious, but telling us little except the deadly effects and the terrifying possibilities of the atomic bomb.

In an effort to acquire some rudimentary but up-to-date knowledge of the atom itself, I managed to put aside the recollection of the dismal chores that the study of physics and chemistry were to me in my otherwise carefree and happy school-days. Of all the books and articles that have come my way on this vital subject, I feel confident that I have been most fortunate in encountering one entitled "Explaining the Atom". (By Selig Hecht. Published by The

Viking Press, New York. 205 pp.)

A stupendous fund of information is stored in these deceptive simple pages. Seldom has technical information been assembled so conveniently, and explained so lucidly. Not only is this little book wise, it is a host of things few books of its type can claim to be. Above all, it is optimistic! It is also philosophic, entertaining, and highly instructive. It is in refreshing contrast to the lugubrious laboring of more pretentious authors, far less qualified than Dr. Hecht in practical teaching experience. You can read it in a little over two hours, and you are most likely to do so because it is too stimulating to put by. Reading it is almost like participating in an absorbing discussion about the world's most important topic, with a patient, good-natured, painstaking, but unpedantic instructor acting as moderator rather than professor.

Whether or not Dr. Hecht realized it, he has written a book possessing excitement on almost every page. He makes his readers enthusiastic, anxious, hopeful partners in every laboratory experiment; makes them share the cruel disappointment and dejection at every failure; makes them jubilant at each new discovery, or on reaching scientific proof of a theory. His descriptions of the exploration and development of radioactivity by Pierre and Marie Curie are particularly keen and vivid, but utterly without the cheap dramatics so precious to Hollywood. He handles all of his examples with the seriousness they merit, but without that forbidding austerity that seems to cling to most writing on scientific subjects. The pedant is comfortably absent here. Scientific things are enlivened with a light and enlightening touch. There are passages that, although far from frivolous, are pleasantly frolicsome. One would almost wish to be a student again in a physics class where the professor, with a glowing personality such as Dr. Hecht must possess, would describe dull base lead as being fully effective against sophisticated gamma rays, but permitting neutrons to romp through it with relative ease.

Of the historical background of the atom, uranium fission, neutrons, isotopes, protons, plutonium, and the other impressive terms that are tossed about so glibly nowadays, Dr. Hecht says:

"The things and ideas for which these words stand were not discov-

ered by the Manhattan District; they did not suddenly arrive on the scene. They arose during the continuous growth and development of a segment of science that forms one of the most fascinating chapters in the history of the human race. To extend Isaac Newton's metaphor, the development of a bomb, by the release of atomic energy, is merely the latest impact of the wave of physical science that began about fifty years ago on the ocean of knowledge. To understand atomic energy one must know the origin, the course and the properties of that wave. And that means understanding the structure of the atom".

The Greek legend of Prometheus stealing fire from the jealous gods for mankind's benefit, may well have provided Democritus with the clue to the theory he pronounced in the Fourth Century B. C. It is interesting to us now, because even a brief study of the history of the origin of the atomic theory will dispel some of the mystery with which it has been shrouded, deliberately or otherwise.

In the Third Century B.C. another Greek, Epicurus, continued the speculations about the atom. He inspired, in turn, the Latin poet Lucretius (99-55 B.C.). In an adept conjunction of science and poetry, Lucretius evidenced an amazing prescience in a work entitled "On The Nature of Things". A cogent passage from it reads:

"There is no lack of atoms which by change may rise up and accumulate from the infinite. It may wreck the sun of things with one wild storm, or bring upon it some perilous disasters. Nor is there any lack of space or deep void into which the ramparts of the world may be scattered."

The Lucretian conception of the atom was entirely different from that of the Manhattan District; but that is easily understandable in the light of the perfection of scientific apparatus through the centuries. Nevertheless it emphasizes our debt to the ancients and removes much of the novelty of atomic theories.

From the ancient Lucretius to Grassendi in the 16th Century to Newton and Boyle and Dalton in the 18th, the exploration and investigation of the atom went quietly but steadily forward. There is considerable evidence that the interest in this highly technical subject was not limited to a cloistered few. An 18th Century English Magazine, bearing the picturesque title "The

(Please turn to page 344)

BUY LUBRICANTS ON PERFORMANCE

API committee report claims that specifications for lubricating oils and greases do not provide an adequate measure of value; advocates reliance on brand names warranted by the supplier to meet established standards of performance and service

DECLARING that the business adage that "the most valuable ingredient of any product is the maker's good name" applies to lubricants almost beyond any other material, the Lubrication Committee of the American Petroleum Institute in a report entitled "Buy on Performance" points out that a manufacturer's responsibility ends with the meeting of specifications. From that point on, the unwritten law of "*caveat emptor*" governs, while on the other hand, products purchased by their brand names hold their manufacturers responsible for their performance.

Inasmuch as industrial purchasing agents are heavy buyers of all types of lubricants, ranging in prices upwards to \$140 per gallon, they will be interested in the Committee's application of the mooted "specification versus brand" theme to the purchase of lubricants.

"Some large buyers of lubricating oils and greases, like large buyers of any other material, believe that by standardizing their purchases on a specification basis rather than on brands they encourage price competition, and thereby enjoy savings which buying by brand would not give them," states the committee in the introduction to its report, which continues with the statement that back of the setting up of any specification is, therefore, the willingness to purchase the cheapest product that will meet the specifications.

"A fundamental requirement in the successful use of any specification is the existence of adequate and practicable measurements that are acceptable to suppliers as well as to purchasers," continues the report. "In this connection a recent report of A. S. T. M. Special Sub-Committee of Committee D2 stated that 'there is not nearly enough reliable information now available as regards test methods to permit workable oil purchase specifications which would, within themselves and without performance tests, serve as a reliable guide in the selection of

lubricants. In other words, laboratory tests are not safe guides to service performance.

"It may be argued that there are a large number of lubricant requirements where the oil need have no special qualities, and it is quite true that the purchase of commodity oils by simple physical specifications is practiced by many buyers. Where the requirement are not exacting and viscosity is the principal characteristic, this practice is quite feasible and satisfactory.

"Performance evaluation, on the other hand, is necessary for products superior to a minimum serviceability standard, but the tests required to evaluate performance characteristics in a lubricant involve long and costly procedures which few buyers are able or qualified to make. Hence, within any time limit practical for the consumer, the minimum of acceptance will be so low that almost any oil would pass. Even poor-quality lubricants may not fail, and yet the relatively short times involved offer no challenge to high-quality lubricants.

Weakness of Specification Buying

"One of the greatest weaknesses in any specification approach to the purchasing of lubricants is that any acceptable specification will generally be low enough to include products that will just do the job.

"And this is what the use of minimum specifications usually brings about—the purchase of the most cheaply constructed lubricant that will just pass the minimum limits of the specifications. Certainly, the oil selected on this basis will not produce the best service performance.

"The purchaser who attempts to define quality by specification accepts the responsibility for the performance of the lubricant. The supplier's responsibility ceases when he delivers material meeting the specification. Competition will force him to deliver the cheapest possible material and he will have no incen-

tive to include service and no reason to improve his product."

Practice of Approved Merit

The report presented the following practice as being used successfully for many years which enables a purchaser to derive the benefits of performance evaluation.

Galley 2

"With his own or the oil companies' engineers the purchaser determines desired standards of performance for his particular equipment and operating conditions, and then requires suppliers to meet these standards with brands whose quality, suitability and uniformity are warranted. Such a purchaser relies on the oil companies' research laboratories for the development of manufacturing skill and engineering test procedures."

Standards of performance can usually be determined by analyzing four factors. These four factors, according to the report are:

(1) The effect of the lubricant on production, involving such factors as time out for lubrication failures or replacement of worn parts, and uniformity of production. "There are many industries", says the report, "in which the level of lubricant quality can be directly measured by quantity or quality of production."

(2) The effect of lubricant on maintenance, the statement being made that "The best measurement of the quality of any lubricant as a lubricating or cooling medium is in most cases its effect on maintenance costs. If bearings or gears, for instance, must be replaced sooner due to the unsuitability of a lubricant, maintenance costs are accordingly increased. If motor truck mileage is doubled without renewal of piston rings, reboring cylinders, or adjusting clearances, maintenance per mile is reduced."

(3) Effect of Lubricant on power. In certain industries, such as textile spinning, friction in thou-

(Please turn to page 350)

WHEN SILENCE MEANS ASSENT

● By Leo T. Parker

The old proverb has legal significance as interpreted by the courts. Under proper circumstances an enforceable contract can be established without an oral or written acceptance, but it's dangerous to rely on tacit understanding if you want to be sure

Recently a reader wrote as follows: "I am a purchasing agent. A few weeks ago, on April 2, I inspected certain merchandise at the manufacturer's plant. I stated our requirements and made him an offer but did not place an order. A few days later, on April 5, I received a letter from the manufacturer stating that he had thought the matter over and knowing that we needed the merchandise he was holding it for us. He plainly said 'I will hold this merchandise for you. Unless I hear from you at once that you don't want it I will expect you to send your truck and take delivery at the price you named not later than Saturday, April 12.'"

"On April 7 I refused an offer from another seller to sell the same quality of merchandise at less than the price I had offered the manufacturer. When our truck went to the manufacturer's plant Saturday, April 12, the manufacturer informed our truck driver that he had been offered a better price by another purchaser and had sold the merchandise. Now, I find that the merchandise is not available any place. In other words, we are out of luck as I can't buy the merchandise which we need badly. What are our rights against this manufacturer?"

The points of law involved in this controversy should be interesting to all purchasers. Therefore, we shall review details of the law on this important subject.

Generally speaking, a valid contract is not made or completed until the buyer or seller unconditionally accepts the offer made by the other party. Hence neither buyer nor seller has any recourse for breach of an invalid or nonexistent contract, unless "silence" is legal acceptance.

Before a dependable answer can be given to the reader's above quoted question we must decide the

point of law, as follows: When and under what circumstances may a purchaser *by his silence* impliedly accept an offer submitted by a seller to sell merchandise? That is our question, no more, nor no less.

Assent Is Important

First, it is important to know that mutual assent of the parties is necessary to make a valid contract of sale. Generally speaking, a valid sale contract results from an offer by one party and acceptance by the other. The offer when communicated is a mere proposal to enter into the agreement and must be "accepted" before it can become a binding promise.

On the other hand, all courts are in accord with the proposition that if either the buyer or seller declines to speak when speech is admonished at the peril of an inference from silence, his silence may justify an inference that he admits the truth of the circumstances relied on or asserted by the other party. See May, 184 N. C. 150. Also, see the following excerpt from the Restatement of Contracts, Sec. 72b:

by silence and the offeree in remaining silent intends to accept the offer."

Let us assume extreme conditions, as follows: A seller submits an offer to a purchaser. In his offer the purchaser states that his offer is open for acceptance until April 10, at 4 P.M. The purchaser writes saying that if the seller does not hear from him further before April 9, he will send for and take delivery of the goods April 10.

Under these circumstances a valid contract automatically comes into existence at 12 Midnight, April 8. This is so because the purchaser himself stated that his method of acceptance of the offer was to be his silence.

And again, in Williston, it is said: "Mere silence, though unaccompanied by any act, may amount to an acceptance if the offeror requested that mode of indicating assent, and assent was intended by the offeree. Whatever may have been the offeree's state of mind, no contract can be made unless the offer stated that the offeror would assume assent in case the offeree made no reply."

As above indicated, if a purchaser used silence as a means of indicating his assent or acceptance of the seller's offer and the seller indicated that silence would be legal acceptance, every requirement for the formation of the contract has been satisfied and a valid contract exists.

Hence a valid sale contract automatically is made by silence of a purchaser if a seller makes an offer to a purchaser and *at this time* both the buyer and seller agree that a valid contract shall be made if the purchaser *does not* reject the offer within a specified period.

Modern higher courts consistently hold that in cases involving fraud either the buyer or seller may be guilty of fraud without *mutual as-*

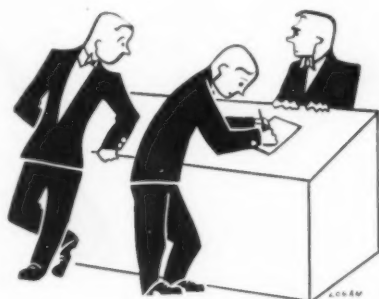


"Where either a buyer or seller fails to reply to an offer, his silence operates as an 'acceptance' in the following case and in no others: Where the offeror has stated or given the offeree reason to understand that assent may be manifested

sent of both parties. For example, under any and all circumstances a seller is guilty of fraud where he keeps silent when in honesty toward the buyer he should disclose facts, as defects in the merchandise. The same law is applicable to *all* other persons when knowing that silence will effect damage of financial loss to another.

Fraud Is Different

See Helena, 91 N. E. 1137. Here a person named Klamut stood by and thereby encouraged a seller to believe that merchandise, being purchased by another, was being sold on credit, with the understanding, that Klamut himself would become jointly liable for payment of the merchandise. Since Klamut had stood by and remained silent, thus indicating to the seller that he assented to having the merchandise charged to the joint account of himself and the purchaser, he was held jointly liable.



With respect to contracts of sale, a seller is *not* liable in damages for fraudulent silence, statement or promises made to a purchaser who did not rely upon such statements before the sale was made, or the contract was signed.

For instance, in a leading case *Campbell Company*, 21 N. W. (2d) 427, the higher court refused to hold the seller liable on a fraud charge because the purchaser failed to prove that he relied upon the alleged false statements, acts and silence of the seller. In other words, the purchaser did not prove that the fraudulent acts were performed by the seller *before* the contract of sale was signed. This court explained that a seller is not guilty of fraud and deceit, unless these facts are proved: (1) the seller made a material and positive representation whether by words or silence; (2) that when made, the seller knew that it was fraudulent; (3) that the seller made it with the intention that it should be acted on by the purchaser; (4) that the purchaser acted in reliance on it; and (5) that he thereby

suffered injury or financial loss.

With respect to contracts taken by salesmen, here is the law: A seller is *not* liable for fraud if the evidence proves either of these facts: (1) That the salesman made a false statement *after* the contract was signed; (2) that the salesman actually did not know that the quality of the merchandise was not the same as claimed in the sale contract, but merely expressed an opinion that he *believed* the quality to be as represented; or (3) that the purchaser did not rely upon or believe the guarantee or statements made by the seller's agent.

Duty To Speak

Notwithstanding the above law, under no circumstances may a valid contract result from silence on the part of the purchaser, unless it is his legal duty to *not* remain silent with respect to the seller's offer. Stating the law differently, the general rule seems to be that silence on the part of the purchaser, after

he has received an offer, will not be construed to constitute an acceptance of the offer unless under all the facts and circumstances there is a duty on his part to make a reply to the offer.

For example, in *Cole-McIntyre-Norfleet Company v. Holloway*, 214 S. W. 817, it was shown that a salesman took an order from a purchaser who heard nothing more from the seller until he requested that the seller ship the goods ordered several months earlier.

The court held that silence of the seller for an unusual length of time amounted to assent. In its opinion this court held that acceptance of the buyer's offer could be inferred from silence of the seller since it was his duty to not lead the purchaser to believe that the goods would be shipped in due time. The seller's silence accomplished this result, and hence a valid contract was made.

The higher courts held that *silence* was equal to an uncondition-

YOU CAN GET INTO TROUBLE BY SAYING NOTHING

Can the buyer assume that his order is accepted when he gives it to the salesman, without getting a formal acknowledgement from the supplier?

Can the buyer claim fraud in respect to something that the seller has not said?

What special precautions should be taken in concluding the first transaction with a new supplier?

In dealing with an established source of supply, what legal force is attached to the vendor's previous practice concerning written acceptances?

If the buyer is silent on the subject of specific quantities contemplated in a purchase agreement, does this agreement constitute a valid contract?

Can a buyer force acceptance of an offer by stipulating that this will be considered binding unless advised to the contrary before a certain date?

How does the court decide what the seller's intention is, if the latter does not expressly state his intention?

Does merely the failure to reject an order imply that the order is accepted and enforceable?

How long may a buyer or a seller remain silent regarding a transaction without committing himself to a course of action?

What are the buyer's rights to cancel an order before the seller actually informs him of its acceptance?

Does the buyer's failure to reply to a conditional acceptance affect the validity of a contract?

al acceptance of an offer, in case as follows:

In Davis, 252 S. W. 989, the testimony showed facts, as follows: A buyer requested a seller to cancel an order for rugs. The seller cancelled the order but by mistake he shipped the rugs. In correspondence the seller offered to extend the time for payment if the purchaser would keep the rugs. The purchaser did not respond or answer this letter but kept the rugs for a year.

The higher court held that the purchaser must pay for the rugs and explained that the purchaser's silence plus his failure to return the rugs indicated to the seller that the purchaser would keep and pay for the rugs.



Also, see Wheeler, 178 Mass. 141. The testimony showed facts, as follows: A seller wrote to a buyer who was dissatisfied with the merchandise delivered to him and also with the previously quoted price. The seller offered a reduction in price. The buyer delayed over a month in answering the letter.

The higher court held that the purchaser's silence was "legal acceptance", and that he must keep and pay for the merchandise.

In Lamis, 229 N. W. 756, the higher court held that where a purchaser failed to respond to a seller's telegram, regarding changes in the contract, and permitted the seller to ship the merchandise five days later, the purchaser must accept and pay for the merchandise. This court said:

"This letter. . . having been received by the plaintiff (purchaser) five days before the date of shipment and having been retained by him without objection, we think it must be held that, as a matter of law, to have become the contract between the parties."

In Pierce, 230 S. W. 1116, the higher court said that generally speaking silence does not often constitute consent or valid acceptance of an offer, but that it may when coupled with other circumstances.

The higher courts are in accord that a valid contract is made where a seller makes an offer and the purchaser submits a counter offer, and then the seller, without answering the counter offer, ships the merchandise to the purchaser. See Hartwell, 299 Ill. App. 399.

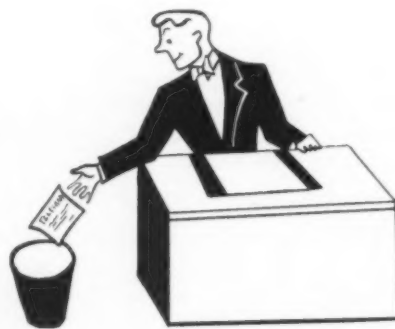
Also, see Excelsior, 23 Ky. L. Rep. 1834. Here, a purchaser wrote a letter to a seller making an offer different from the original offer submitted by the seller. The seller did not respond to this counter offer but shipped the merchandise. The higher court held that the seller was bound by the counter offer made by the purchaser.

Also, see Everett, 289 Fed. 686. The testimony showed facts, as follows: A purchaser sent a written offer to buy coal. The seller accepted the offer with modifications and then shipped the merchandise which the purchaser accepted.

The higher court held the purchaser obligated by the modifications in the seller's counter offer.

This court said that if the purchaser did not expect to be bound by the modifications he should have refused to accept delivery of the merchandise. Also, see to same effect, the following cases: Tilt, 5 Daly (N.Y.) 19; Roberts, 48 Mo. App. 239; White, 161 Cal. 453 and Riverside, 114 Conn. 492.

In Metzger, 32 App. D. C. 434, it was shown that a salesman took an order and sent it to his employer for acceptance. The employer did not either accept or reject the order for several months. Since it had not been the custom of the employer to ship orders to this purchaser without formally accepting or approving the salesman's orders, the higher court held that the purchaser could not recover damages for the seller's failure to ship the merchandise.



Also, in Senner, 173 N. Y. S. 265, the higher court held:

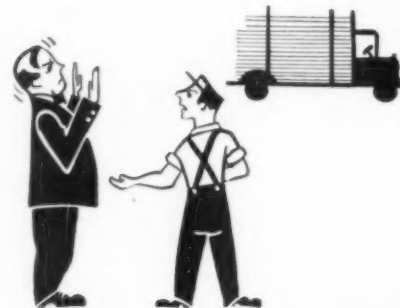
"I know of no presumption in

law that when a salesman offers goods to a purchaser and the purchaser agrees to take same that the order will be filled."

And, in Gauld, 41 So. 675, the higher court held that there is no time between the date a salesman takes an order and the date the employer accepts it that the purchaser cannot cancel the order.

No Valid Contract

In order that readers may have, at first hand, information of exact conditions under which silence does *not* amount to acceptance of an offer, we shall review higher court decisions as follows:



In Show, 201 Pac. (2d) 1066. The testimony showed facts, as follows: A seller mailed an offer to a purchaser to sell merchandise. The purchaser answered the letter and intended to accept the offer. However, although the seller's offer had not stipulated credit, the purchaser in his letter of acceptance stated that he wanted 60 days credit.

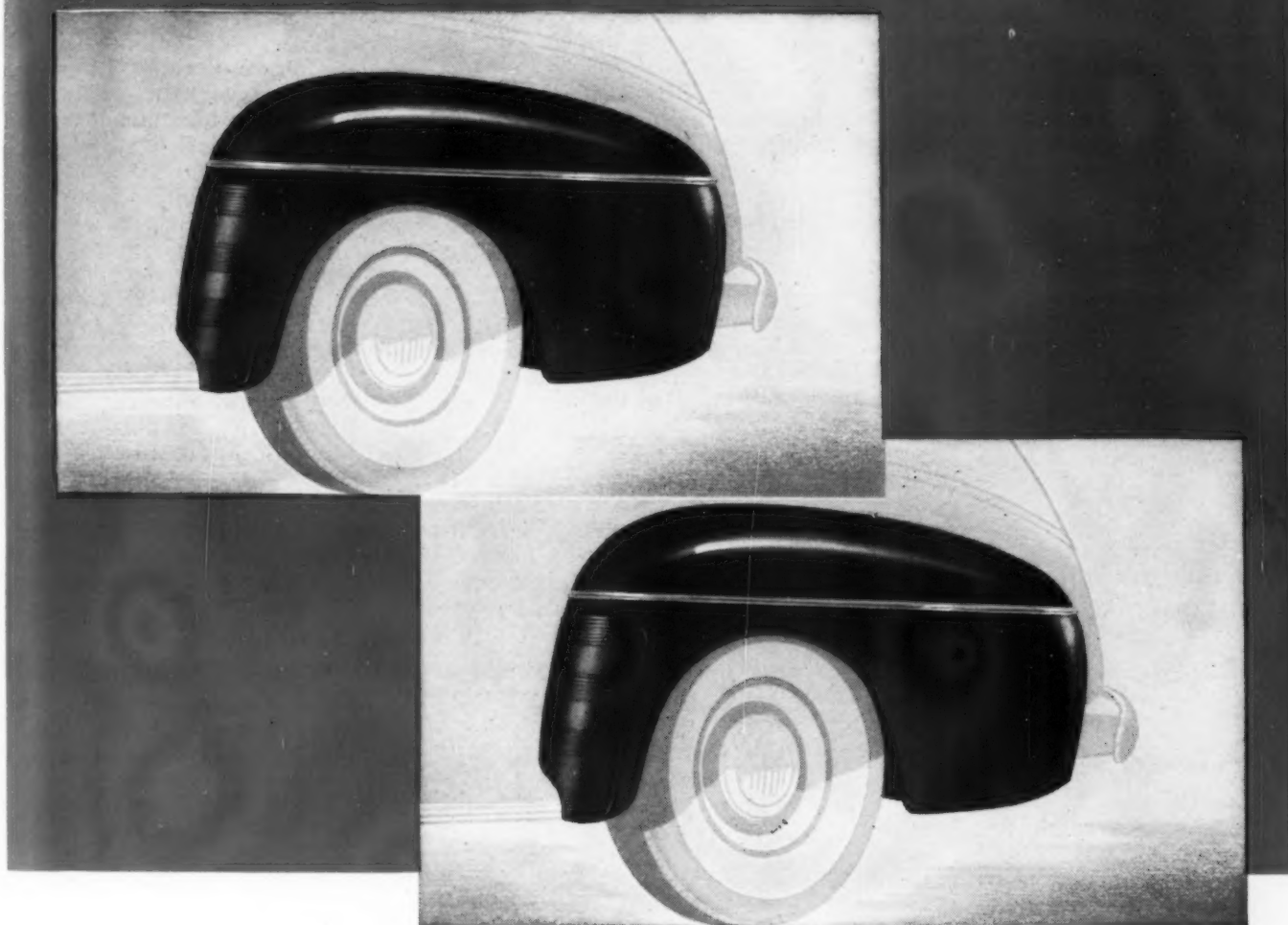
In subsequent litigation the higher court held that no valid contract was made and that the seller could rightfully refuse to deliver the goods to the buyer, although he did not answer the purchaser's letter of conditional acceptance.

In Baisdell, 311 Pa. 6, a person who received a letter enclosing a check on deposit, then made a slight change in the method of payment. The higher court held that since the other party failed to answer, there was no valid contract.

In Russell, 106 Wis. 329, it was shown that a salesman took an order for one car of flour to be shipped "between now and July 1st. The seller confirmed the order stated that the order would be shipped in June, terms 30 days, with interest at 8%. The buyer did not reply and the higher court held that his silence did not make a valid contract.

In Muddy, 158 Ky. 247, it was shown that a purchaser held an offer made by a seller without

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N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN
UNIT OF NATIONAL STEEL CORPORATION

making a reply. The court held that no valid contract was made but that there would have been a valid contract, if it had been agreed between the buyer and seller that the buyer's silence meant that he accepted the offer.

In *Marshall*, 269 Mich. 339, a buyer ordered baskets with fancy hoops. The seller immediately telegraphed that he would ship baskets with plain hoops. The purchaser did not answer until three days later. The higher courts held that no valid contract was made.

In *Meadow*, 228 Ala. 279, it was shown that a buyer ordered lumber "free from heart". The seller wrote asking whether the purchaser would accept lumber having heart in it. Also, the seller stated, "If I do not hear from you I will take it for granted that you will want the lumber with heart." The buyer did not answer.



In subsequent litigation the higher court held that silence on the part of the buyer did not make a valid contract. Thus, the purchaser was not liable for failure to accept and pay for the shipped lumber with heart.

In *McCormick*, 89 Iowa 525, the testimony showed facts, as follows: A buyer requested a seller, by letter, to submit a price or bid on the quality and quantity of merchandise specified by the purchaser. The letter contained a sentence in which the buyer said that he would pay the account at once.

The higher court held that no valid contract existed, although the seller failed to answer this letter.

No Agreement on Quantity

In *Bogwell*, 145 S. W. 546, the buyer wrote a very plain and clear letter saying: "I will buy all the ties you can make the balance of this year." The seller did not answer this letter but proceeded to make ties and put them aside for the purchaser.

In subsequent litigation the higher court held that the purchaser was

not obligated to accept and pay for any ties.

And, again, see *Joseph*, 121 N.Y.S. 73. Here a purchaser clearly stated that he would purchase all the merchandise the seller could procure. But the higher court held that no valid contract existed because the seller did not answer and state that he was accepting the proposition.

And, in *Briggs*, 168 N.Y.S. 74, in a letter a purchaser agreed to purchase his printed matter from this printer. Also, the purchaser specified the price he would pay. The printer "accepted" this offer but the higher court held that no valid contract was made, and refused to hold the purchaser liable in damages for failure to accept and pay for any printing, because at no time had the purchaser specified the "quantity" of the printed matter he would accept and pay for.

In *Mountain*, 228 S. W. 451, the higher court refused to hold a purchaser liable for a contract breach where the testimony proved that although he had agreed to accept a specified quantity of merchandise in a given time, the letter of accept-

ance sent by the seller did not clearly state how much merchandise he would ship.

Brief Review

Thus, from the above higher court decisions we know that:

(1) Silence, when in honesty to the purchaser the seller should "speak", is legal fraud,

(2) Silence of either a buyer or seller is legal acceptance of an order or offer if it was mutually agreed previously that silence would be legal acceptance,

(3) Silence of either a buyer or seller is legal acceptance if, during past transactions, silence was taken to mean acceptance of offers,

(4) Silence of a seller who received an offer or order taken by his salesman is legal acceptance if in the past it was a custom of the seller to ship merchandise without formally writing the purchaser and accepting orders taken by the salesman,

(5) As between strangers, silence never is a legal acceptance, although one states that he will consider silence a valid and legal acceptance by the other.



"Just wait till he finds out he's talking to himself!"

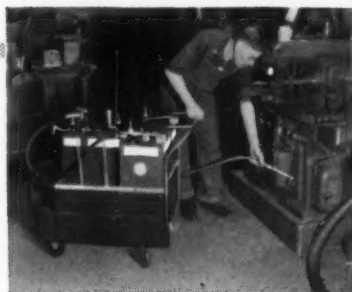
More Alemite "Cost-Cutters"

**TO HELP YOU SAVE TIME,
MONEY, LUBRICANTS, MACHINES**

ALEMITE Hand Operated LubriKart

**A Complete, Portable
Lubrication
Department on Wheels**

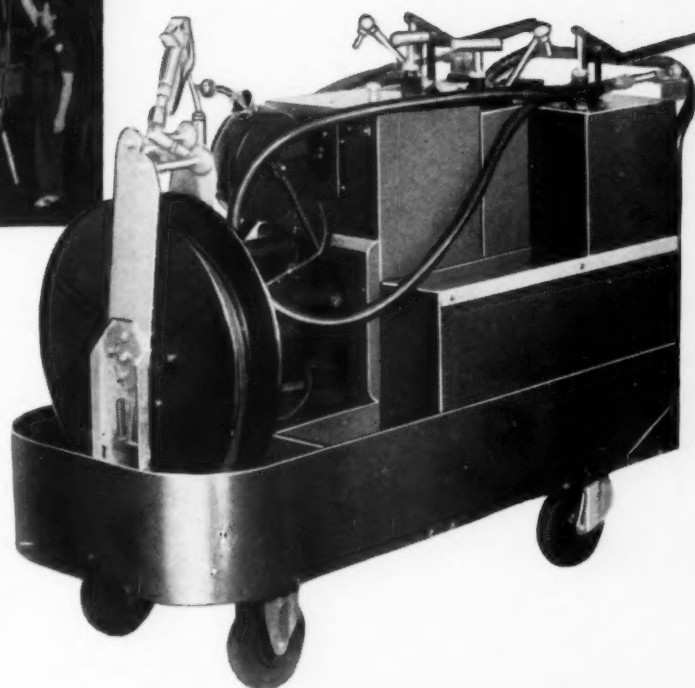
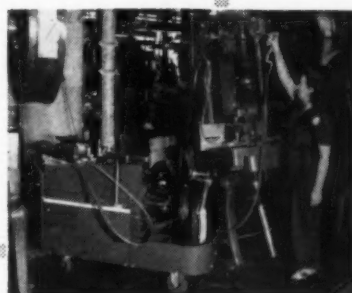
Model 2426-A—Only 44" long x 21" wide x 37½" high. Its big wheels make it roll easily on rough floors, highly maneuverable in cramped areas. Carries necessary lubricants and equipment to service machines without returning to oil room.



ALEMITE Electrically Operated LubriKart

**Just Plug in for High Pressure
Lubrication**

Model 2428—Only 55¼" long x 21" wide x 39" high. Light in weight, easily rolled and handled in narrow spaces. Operates off any power socket. Carries necessary lubricants and equipment to service machines plus 20 ft., high-pressure lubricant hose mounted on spring return reel.



FAMOUS Alemite LubriKarts make transferring, handling and application of lubricants a quick, clean, easy job in big or little plants. They come equipped with oil cans, grease guns, pumps for filling gear housings and oil reservoirs, gun loaders for filling hand guns.

Alemite LubriKarts handle general purpose grease, ball bearing grease, gear oil, spindle oil, hydraulic oils, compressor oils, etc. They are ideal for machine shops, bottling plants, laundries, textile mills, oil rooms, food processing plants—in fact any type of industry.

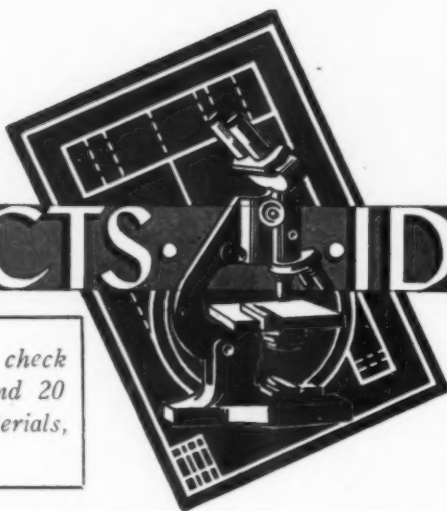
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Purchasing Agents and their Assistants are invited to check the pre-paid "Ask Purch" postcards on Pages 19 and 20 for late catalogs and bulletins on New Products, Materials, Finishes, Equipment, etc.



PORTABLE FLIGHT CONVEYOR



MODEL CFL
Tote-All Flight Conveyor, available in 14 ft. and 20 ft. lengths, will handle bulk material such as coal, dirt, grain and similar products at inclines up to 45°. It can also be used for handling hot castings. Power is furnished by electric motor or gasoline engine which will handle up to 60 tons per hour of 50 lb. per cu. ft. material. Maximum discharge height of 14 ft. model is 10 ft., 20 ft. model, 14 ft. Minimum on both models, 4 ft. Flight speed is 100 ft. per minute. Overall frame width is 13¾" and trough width is 10¼". The conveyor comes mounted on a combination trailer and hydraulic lifting device. Literature available. *Material Movement Industries, 310 So. Michigan Ave., Chicago 4, Ill.*

ALL-ALUMINUM DRUM



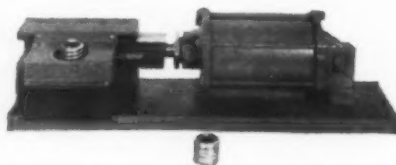
THIRTY-gallon all-aluminum drum, designed for shipping hydrogen peroxide, is also suitable, under most conditions, for transporting and storing a wide range of other materials including certain pharmaceuticals and chemicals, and vegetable, animal and mineral oils. It is desirable to conduct tests on individual products where application has not been previously definitely determined. The drum weighs 34 lbs., is 30½" high, 18" outside diameter not including reinforcing rings 1½" high. Top end of drum is equipped with a top bung and cap. A side bung with a 2" opening is also provided. *Reynolds Metals Co., 2525 S. Third St., Louisville 1, Ky.*

NEW CONCENTRATED CLEANING COMPOUND

on linoleum, cork, and many other types of flooring, and for general cleaning. It dilutes in water at the rate of two ounces to the gallon. When dry mopped it provides a polish. Rinsing is usually needless after application, it is stated. The cleaner is aromatic but leaves no clinging odor, it is said. *The C. B. Dolge Co., Westport, Conn.*

KADOL is a new concentrated liquid cleaning compound. Manufacturer states that it is neutral and may be used

PNEUMATIC MARKING MACHINE



SPECIAL purpose marking machine for imprinting the circumferences of small cylindrical parts, thick-walled or thin-walled, is operated pneumatically. It is fed by hand and controlled by a four-way foot lever. Production speed is from 500 to 1500 parts per hour, depending on skill of operator. Job determines size of the machine. Illustration shows machine designed to mark brass electric screw bases. Each unit is equipped with attachment to control depth of mark to allow for differences in thickness of materials being marked. *Jas. H. Matthews & Co., 3959 Forbes St., Pittsburgh 13, Pa.*

PORTABLE ELECTRIC GLUE HEATER

NEW portable electric glue heater provides quick heat, automatically held at 150 to 160 F by a thermostat, and is insulated to prevent heat loss. The removable glue pot is of copper, nickel plated for corrosion, and wear-resistance. A heavy duty, insulated electric cord is supplied. Capacity of the heater is 2 quarts. It is designed for regular 115 volt a-c current. Special units for 230 volt a-c current are available. *Hanson-Van Winkle-Munning Co., Matawan, N. J.*

TOTE PAN LIFTER



TOTE pan lifter is powered with two standard 6 volt storage batteries and is controlled by a push button on the handle. Its lifting capacity is 150 lbs. Overall height is 5' 9", and lifting height is 54". Protection of the operator's feet is provided by safety hoods mounted on the Forgeweld swivel caster running gear. *Service Caster & Truck Corp., Albion, Mich.*

ELECTRODE FOR HARD-SURFACING APPLICATIONS

NEW electrode is made for hard-surfacing applications where resistance to impact, wear, and abrasion is required. Designated Type W-94, it will work harden to over 50 Rockwell C. It operates on a-c or d-c reverse polarity. It is available in 14" lengths, with diameters of ¼", 3/16", 5/32", and ¼". and is packaged in 50 lb. standard packages. *General Electric Co., Schenectady, N. Y.*

STANDARD GAGE DIAL INDICATOR

QUADRANT type dial indicator has standard mounting dimensions. Designated as Micro-nar, it is suited for use on comparators and on fixtures for controlling especially close tolerances. The scale of the English unit model is divided into .0001" steps and in the central portion these intervals have been subdivided to .00002". The effective range is .0018". The dial is rotatable over a small angle by means of a fine adjusting screw. The instrument is furnished with a sapphire tipped contact point. *Standard Gage Co., Inc., Poughkeepsie, N. Y.*



(Please turn to page 148)

This special "Y" combines two 10-inch, standard weight, long radius welding elbows—TUBE-TURN Part No. 1, immediately available everywhere.

"A speedy, simple, satisfactory answer"

MANY's the time when a long delay in getting a special fitting seems unavoidable. Many's the time when that fitting can be fabricated from TUBE-TURN Welding Fittings out of stock and give you the right answer—"speedy, simple, satisfactory."

The "Y" diagrammed above was put together with standard TUBE-TURN welding fittings, shown in Tube-Turn Catalog No. 111, and taken out of reg-

ular stock. This gave the designer what he needed when it was needed, in a hurry.

TUBE-TURN welding fittings are particularly suitable for piping fabrication because of the uniform wall thickness and full circularity which allows them to be cut and joined at odd angles, and because of uniformity from fitting to fitting. Order two, a hundred, or a thousand TUBE-TURN welding fittings

of the same size and part number, and they will be dimensionally alike.

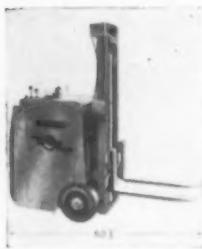
TUBE-TURN welding fittings and flanges are manufactured in more than 4000 types and sizes. They come in a wide variety of metals and alloys. For details, contact the nearest TUBE-TURN distributor. For his name, write to—

TUBE TURNS, INC., LOUISVILLE 1, KENTUCKY
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TUBE-TURN  ***Welding Fittings and Flanges***



FORK TRUCK FOR NARROW SPACES

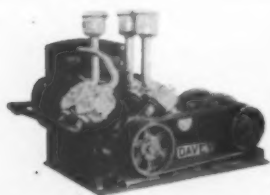


NEW electric fork lift truck is designed for plants with narrow aisle space. Known as Palletier Model LVGH-X, it can stack 42" x 32" pallet loads at a right-angle in 8-foot aisles. One man lifts, hauls and tiers from standing position. Capacity is 2000 lbs. with 36" length of load; 1750 lbs with 42" length of load. Other features include fume-free operation, full magnetic contractor control, hydraulic lift, ready access to all mechanisms. *Crescent Truck Co., 1150 Willow Street, Lebanon, Pa.*

SOLDER HAS 20% SILVER CONTENT

NEW silver solder, with 20% silver content, is claimed to have high capillary action, exceptional tensile strength, and good appearance after brazing. The alloy has a melting temperature of 1430 F, and a shear strength of 145,000 psi. It is suitable for brazing carbide tips to steel shanks and for the fabrication of light steel parts. It can also be used on steel, brass, copper, stainless steel, and Inconel. It is available in wire, strip or rings, and is known as All-State No. 120 High Strength Silver Solder. *All-State Welding Alloys Co., Inc., 96 West Post Rd., White Plains, N. Y.*

INDUSTRIAL AIR COMPRESSORS



NEW two-stage, air-cooled industrial air compressors have 60-105-160-210-315 c.f.m. capacities. Known as "Air Chief Industrials", they feature permanent peak efficiency valves and the Davey equilibrium crankshaft. The crankshaft is claimed to reduce vibration, and coupled with use of rubber vibration mounts to eliminate heavy mounting bases and facilitate removal of units from one location to another. The compressors are available in four types: base compressors; stationary units with base ready for installation of electrical equipment; departmental compressors powered by a-c motors; and departmental compressors powered by d-c motors. Illustrated is model 210 with 1800 rpm, 220/240 volt a-c motor. *Davey Compressor Co., Kent, O.*

3/4 OUNCE PLASTIC MOLDING MACHINE

chips and samples, tensile and compression bars, small custom moldings and mold test runs. It features an interchangeable cylinder and heating unit that can be switched in less than three minutes from the molding of one material or color to another, without halts for flushing or cleaning. The cylinder is heated by a thermostatically controlled 450 watt, 110 volt, a-c or d-c unit. The machine uses a tapered, self-locking die. The standard die size is 4 1/2" x 2" x 2 3/8", and the length can be varied to accommodate odd long shaped pieces. *Moslo Machinery Co., 2443 Prospect Ave., Cleveland 15, Ohio.*

"MINIJECTOR"

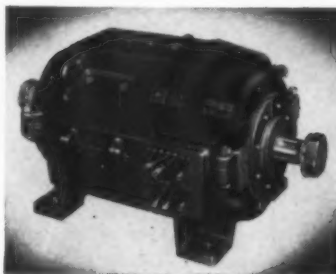
3/4 ounce capacity plastic injection molding machine is made for fast production of color

NEW A-C INERT-ARC WELDER

NEW type WP 220-240-volt alternating - current welding transformer has been designed for use with the Inert-Arc welding process. Suitable for welding aluminum, magnesium, and beryllium copper in an atmosphere of argon gas without the use of flux, it may also be used to weld many other metals and alloys. It is suitable for both manual and machine operation. Built into a single unit are welding transformer, control panel, capacitors for power-factor correction, a bank of series capacitors to stabilize the arc, a pilot spark for arc starting, and water and gas solenoid valves. The welder is readily mounted on an optional three-wheel running gear for portability. *General Electric Co., Schenectady, N. Y.*



NEW MILL MOTOR



HEAVY-DUTY type MC mill motor reduced one frame size is available in totally enclosed, protected self-ventilated or protected force-ventilated construction. It is built in accordance with AISE standards. Features include split frame of cast steel; silicone insulated armature coil conductors; wedges of Class B material to hold coils in slots; new roller bearing housing that eliminates need of thrust washer and collars, etc. It is available in sizes from 5 to 200 hp; in voltages of 230 and 550; and in AISE dimension frames 602 to 618. *Westinghouse Electric Corp., Box 2025, Buffalo 5, N. Y.*

MOTOR-DRIVEN TUMBLE JAR

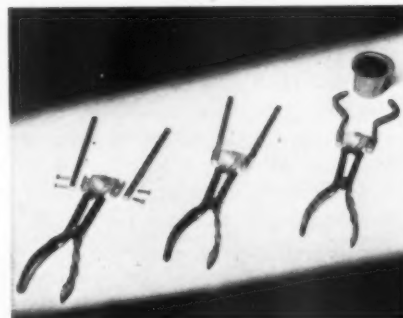


NEW model tumble-jar is powered by a gear reduction motor, and rotates a glazed chemical stoneware jar, 6" diameter by 8" high, at approximately 55 rpm. Heavy glazed jar can also be used as a ball mill. The jar is leak-proof in use. The unit has many applications in chemical process work, and in industrial, textile and food plants. Overall dimensions are 14 x 22 x 15" high. The motor will operate on 115 volts a-c 60 cycles or d-c. *Andrew Technical Service, 111 East Delaware Place, Chicago, Ill.*

SAFETY VALVE FEATURES NYLON DISC

NEW safety valve for air compressors utilizes a nylon disc, working against a bronze seat. Nylon will not flow or creep under spring compression or stick or weld itself to the seat, it is claimed. It is flexible enough to conform exactly to the seat and has recovery characteristic which seals off the slightest air leakage after the valve pops. The valve meets all A.S.M.E. requirements for air compressor service. It has been flow tested and discharge capacities are guaranteed. *Manning, Maxwell, & Moore, Inc., Bridgeport 2, Conn.*

PUNCH PRESS PLIERS

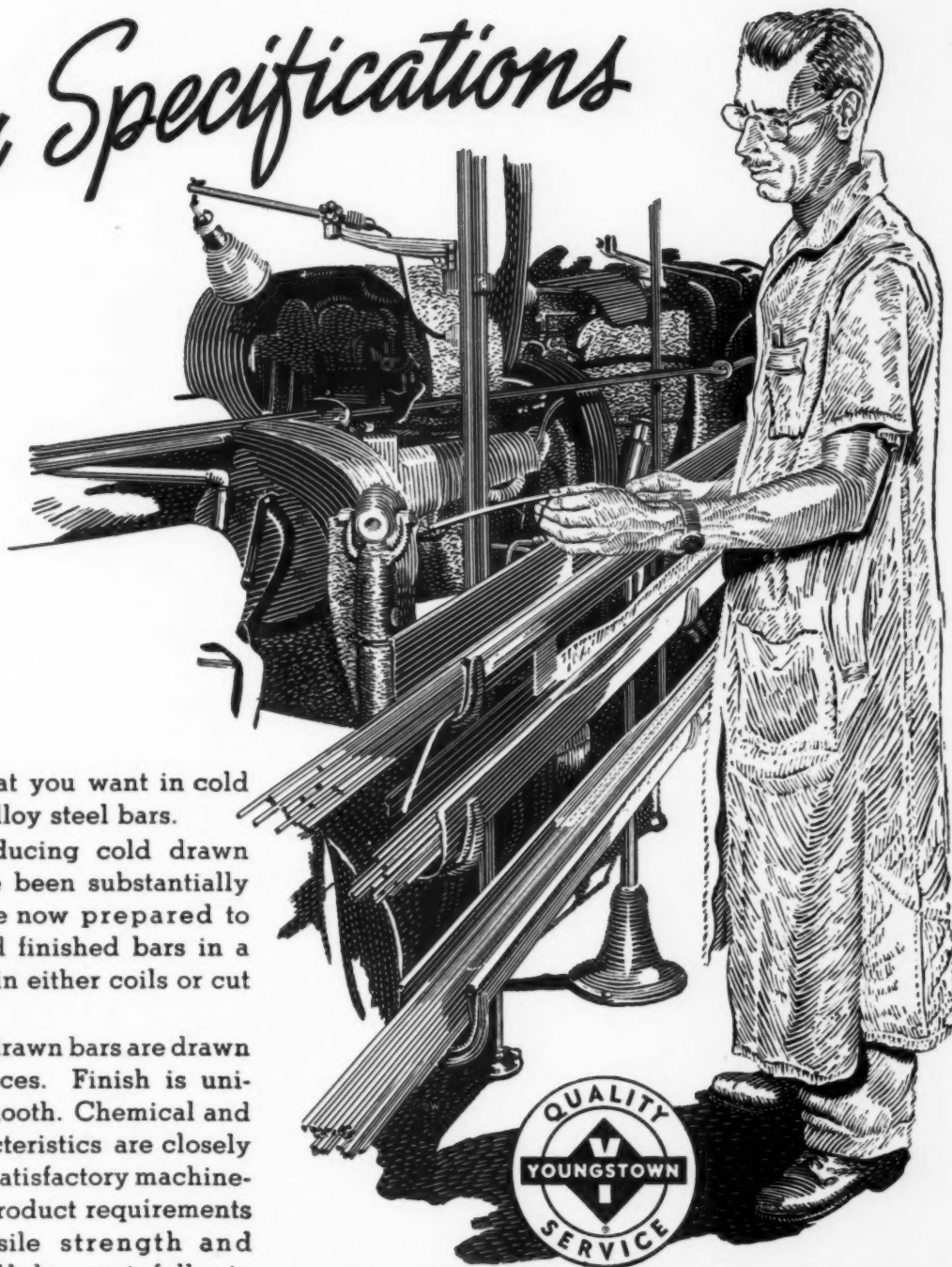


LIGHT, hand-fitting pliers are designed for placing and removing various shaped stampings or parts in dies. Pliers are provided with 1/4" square aluminum alloy bars which can be shaped cold to the individual job. Style "A", with toggle action, holds stamping with slight hand pressure. Jaws open by spring action when pressure is released. Style "B" opens when pressure is applied to handles, closes and grips stamping by spring action when pressure is released. *Universal Safety Equipment Co., 2921 North Cicero Ave., Chicago 41, Ill.*

(Please turn to page 150)

Cold finished carbon and alloy steel bars to meet

Your Specifications



TELL us what you want in cold finished carbon or alloy steel bars.

Facilities for producing cold drawn bars at our mill have been substantially expanded. We are now prepared to supply users of cold finished bars in a wide range of sizes, in either coils or cut lengths.

Youngstown cold drawn bars are drawn to precision tolerances. Finish is uniformly bright and smooth. Chemical and metallurgical characteristics are closely controlled to insure satisfactory machineability. Your own product requirements as to ductility, tensile strength and yield strength will be met fully in Youngstown cold drawn bars.

Get in touch immediately with the nearest Youngstown district sales office. Our representative will call on you promptly, to discuss your requirements and make every effort to serve you to your satisfaction.



YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

GENERAL OFFICES - YOUNGSTOWN 1, OHIO

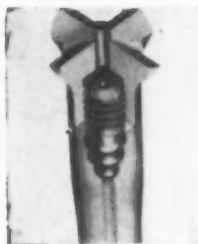
Export Offices - 500 Fifth Avenue, New York City

Manufacturers of

CARBON - ALLOY AND YOLOV STEELS

Cold Finished Carbon and Alloy Bars - Bars - Rods - Wire -
Sheets - Plates - Pipe and Tubular Products - Conduit - Elec-
trolytic Tin Plate - Coke Tin Plate - Tie Plates and Spikes.

STUD-TYPE JACKBIT



NEW Stud-Type Jackbit, with an attachment member called the Jackstud, has been added to the Ingersoll-Rand line. The bit has new wing curves that enable it to retain new bit proportions through many sharpenings.

It drills faster, is easier to detach, and has a minimum of gage loss, according to the manufacturer. The Jackstud, which connects the bit to the drill rod, is made of high-grade, carburized alloy steel selected to withstand this service. It can be used with any drill steel, whether of the carbon or alloy type. Form 4062, containing additional information is available. *Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.*

ELECTRODE FOR WELDING LIGHT GAUGE METALS

NEW electrode, "Hobart No. 13", is designed for welding of light gauge mild steel. Low penetration,

ease of handling and steady uniform transfer make the electrode extra fast for out of position welding on light gauge sheet metal, manufacturer claims. It can also be used for welding light sections of mild steel to heavier ones. It is designed for use with d-c straight polarity or a-c, and is available in 1/16", 5/64", 3/32" and 1/8" diameters. *Hobart Brothers Co., Hobart Square, Troy, O.*

NEW HYDRAULIC PRESS FOR MOULDING OF CERAMICS



NEW hydraulic press, designed for compression moulding of ceramics, is of the two-rod, down-moving type. It is built in two standard sizes of 75 and 150 tons, and is equipped with a 4-station, manually operated dial feed to facilitate loading and unloading of moulds. Use of the dial provides for multiple operations and several operators can be utilized. An oil cooler is provided. Floor space is approximately 74" x 91", and the overall height about 9 1/2 feet. *E. W. Bliss Co., Detroit 2, Mich.*

PORTABLE BENCH-TYPE DUST COLLECTOR

where quiet operation and proportionately high dust storage is required. It is self-contained and is installed by placing on the bench and plugging in to a light outlet. A 1/4 hp, continuous duty 1745 rpm motor for operation on 110 volt, single phase power, drives a paddle-wheel fan capable of clearing chips and dust from grinding, lint and strings from polishing and buffing, and sludge from pumice and other wet finishing operations. Size of the unit is 12" x 14" x 18" high. *Aget-Detroit Co., Main at Washington Sts., Ann Arbor, Mich.*

MODEL No. 330 Dustkop portable dust collector is suited for applications where space is limited, and

PHASE-SHIFT HEAT CONTROL FOR RESISTANCE WELDING



NEW phase-shift heat control for resistance welding machines is designed for use with ignitron-contractors or non-synchronous control combinations not having the heat control feature, when the power supply is 230 or 460 volts. A stepless range of from 20 to 100 per cent (40-100 per cent on 230 volts) RMS current is provided by the heat control. It prevents high-transient starting currents which can result from random starting of the main control. The unit is enclosed in a steel case for wall mounting or for mounting atop the nonsynchronous control combinations. It can also be furnished without the case. *General Electric Co., Schenectady, N. Y.*

NEW CABLE CONNECTOR



ILLUSTRATION shows new 90 degree angle connector designed for the new 1946 Code PVX cables. It has a "shoe-hold" cable grip that locks the cable into the connector without damaging the cable. Designated catalog AC-15, the connector accommodates 14-2, 14-3, 12-2 and 12-3 cables. It is of malleable iron. *Gedney Electric Co., 1270 Sixth Avenue, New York, N. Y.*

NEW LIGHTING FIXTURE



LIGHTING fixture is designed for plant interiors where an atmosphere of dirt, chemicals or other foreign matter cannot be avoided. It is adaptable for low or high bay lighting, and has hermetically sealed silvering in a double walled glass reflector. It cannot peel, is unaffected by different atmospheres and the reflector can be cleaned with any solution without being removed from the fixture, it is claimed. Housing is aluminum and all parts cadmium plated. Manufactured in two sizes: for 200-300-500 watt lamps and for 750 watt incandescent or 400 watt mercury lamps. *Midwest Lighting Products Co., 1360 Beach Parkway, Cleveland, O.*

CHEMICAL TREATMENT FOR NEW ZINC PLATE

"UNICHROME Clear Dip" is chemical treatment for new zinc plate that produces a brilliant conversion

coating on ordinary zinc plate. The treated zinc withstands more than 50 hours of standard salt spray exposure without dulling or formation of white corrosion, it is claimed. Actual dipping time is from 5 to 20 seconds with several water rinses preceding and following. Acid-proof or suitably coated tanks and dipping baskets are used. Bulletin CC-1 available. *United Chromium, Inc., 51 E. 42nd St., New York 17, N. Y.*

TWO-SPEED MOTOR TRANSMISSION



ILLUSTRATED is a two-speed motor transmission unit that may be used to replace two-speed motors, with, according to manufacturer, the added advantage of providing special ratios not obtainable with standard two-speed motors. Direct motor speed, neutral point, and any desired reduction up to 6.25 to 1 are obtainable through an automotive-type gear shift lever. Standard reductions are 1 1/2 to 1; 2 to 1; 3 to 1; and 4 to 1. Units for motor frames 224, 225 and 254 are mounted on flange type end shield. In larger sizes they have modified base mounting corresponding with legs of motor frame. *Western Mfg. Co., 3400 Scotten Ave., Detroit, 10, Mich.*

(Please turn to page 152)

Sound... from every angle

ANOTHER EXAMPLE OF MASTER CRAFTSMANSHIP
IN CHICAGO MOLDED PLASTICS

Sound judgment dictated the use of molded plastics for this huge 30 inch housing for J. P. Seeburg Corporation's wall type speaker. And sound engineering was responsible for its development.

It's a CMPC job from start to finish. The molds were designed and built in the CMPC tool room and are, in themselves, an example of the highest degree of skill.

Compression molded of a black phenolic material, this housing, despite its extraordinary size, is produced in a single piece. It's light in weight and has no objectionable acoustical properties to overcome.

A big job . . . but not too big for CMPC. We're used to the unusual ones . . . large or small . . . injection or compression molded. And we're used to working closely with our customers in the development of molded plastic parts . . . designing and engineering for practical, economical moldability . . . selecting the correct material . . . eliminating the "bugs" . . . to insure the best in molded plastics.

Perhaps that's why so many big names in industry select CMPC . . . and why you, too, will find this a good place to bring your plastics molding problems. Why not discuss your plans with a CMPC Service Engineer . . . now? A letter or phone call will bring prompt action . . . and incurs no obligation.

CHICAGO MOLDED PRODUCTS CORPORATION

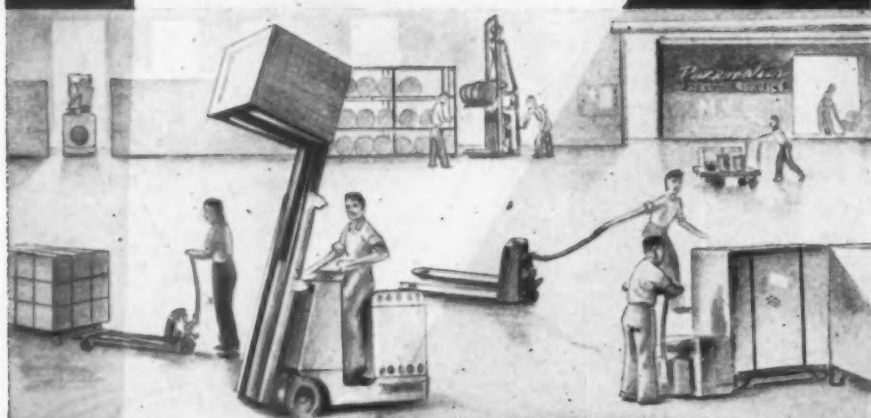


1425 N. Halsted Ave., Chicago 17, Illinois
Branch Offices in Principal Industrial Centers

COMPRESSION and INJECTION
molding of all plastic materials



Sign of a Great Line



32 Years' Experience making **MATERIALS HANDLING EQUIPMENT** for thousands of satisfied customers all over the world. You, too, can **SAVE MONEY**; you, too, can cut costs; increase storage space; reduce accidents, multiply manpower; and speed up production with **L-S POWER FORK TRUCKS . POWER JACKLIFTS . MECHANICAL JACKLIFTS . SINGLELIFTS . HYDRAULIC HANDLIFT TRUCKS . SKIDS . FLOOR TRUCKS . STACKERS . CRANES . PALLET STACKERS . PALLET TRUCKS.**

Write for New Catalog of a Great Line

LEWIS-SHEPARD PRODUCTS INC.

147 WALNUT STREET

REPRESENTATIVES IN PRINCIPAL CITIES

WATERTOWN 72, MASS.

CONSULT YOUR PHONE DIRECTORY

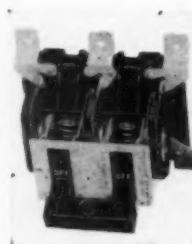


SOLDERLESS WIRE CONNECTORS



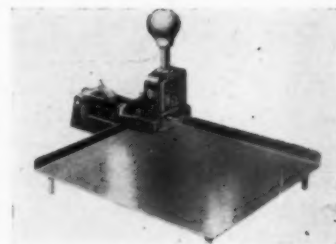
"SOLISTRAND" solderless wire connectors are used with solid or stranded wires and cables of small diameter to make eye splices and straight splices, and to attach wire ends to screws, studs, hooks, etc. Splices and connections are made by inserting wire ends into barrel of the connector and "crimping" with AMP installation tool. No solder, clamps or wire twisting is necessary. Two types are available: the parallel conductor with which can be made eye splices and straight splices; and the flat "tongue" or tab of the ring tongue connector with stud hole for attaching a wire end to a stud, screw or hook. *Aircraft-Marine Products, Inc., 1575 North 4th St., Harrisburg, Pa.*

HEAVY DUTY TUMBLER SWITCHES



NEW heavy duty, one, two, and three-pole tumbler switches, known as "Diamond H" Type TU, are designed for either a-c or d-c current. Fast Breaking and non-arcing, they are rated at 60 amp. up to 250 volt, d-c, and up to 500 volt, a-c. Developed to withstand heavy marine usage, they are also suitable for industrial applications. *Hart Manufacturing Co., 207 Bartholomew Ave., Hartford, Conn.*

CARBON NUMBERING MACHINE



HAND numbering machine is designed for printing through multiple carbon forms. The machine is engraved with Gothic characters designated Style X, and fitted with a metal handle to increase the sharpness of the impression. It is mounted on a W.U. 5B style platform. When required to support larger forms, extension table, as illustrated, is supplied. Uniform and legible impressions through as many as 10 to 15 part forms are claimed. *Wm. A. Force & Co., 216 Nichols Ave., Brooklyn 8, N. Y.*

(Please turn to page 158)

NO MORE COMPROMISING
WITH *Substitute* BUFFS

*you can
now
have*

Jackson

Ventilated



**SAVE
50%**

ON YOUR COTTON
BUFF WHEEL COSTS!

JACKSON BUFF CORPORATION
21-03 41st Ave. • L. I. C. N. Y.

JACKSON BUFF CORPORATION
21-03 FORTY-FIRST AVENUE
LONG ISLAND CITY 1, N. Y.

OFFICE OF THE PRESIDENT

an open letter to buff buyers—

To the Consumer of Cotton Buffs:

During the preceding year your main thought about cotton buffs was-- get them; don't let that polishing room close down! You kept the polishing room going in a fashion, but what a headache! You never had such a mixture of inferior quality buffs in stock, but you couldn't help yourself.

Don't get caught that way again. We will sell you all the Jackson Airway Ventilated Buffs you need. There is absolutely no excuse that you will be able to offer if you do not save your company 50% on every dollar you spend for cotton buffs by the use of the Jackson Airway Ventilated Buff.

Strong language, but a fact and we can't make our appeal or recommendation more emphatic.

We are at your service and solicit your business.

Yours very truly,

JACKSON BUFF CORPORATION
L. W. Mac Farland
L.W. MAC FARLAND
President

JACKSON BUFF CORP

**OUR STATEMENTS ARE *Facts* —
not *Myths*! OUR VOLUME OF
BUSINESS IS EVIDENCE SUSTAINING
THE *Facts*!**

Jackson
AIRWAY *Ventilated* **BUFFS**
improved and perfected
do better work faster
wear twice as long

WILL SAVE YOU
50%

Jackson
AIRWAY *Ventilated* **BUFFS**
are constructed in many
different types for all
purposes — designed for
**LOW COST
PRODUCTION!**



IMPORTANT FEATURES OF
Jackson
AIRWAY *Ventilated* **BUFFS**

- ➔ Raveling eliminated, requires no raking
- ➔ Eliminates burning ➔ Saves compound
- ➔ Faster cutting, and does not ridge work

WARNING NOTICE
Jackson Buff Corporation of Long Island City, New York, has rights to U. S. Patents Nos. Re 19,894 and 2,140,208 which have broad claims covering an air cooled buff having means for the admission of air through the sides of the buff. Owner intends to protect all rights and stop infringement.

REATION

21-03 41st Ave., Long Island City 1, N. Y.

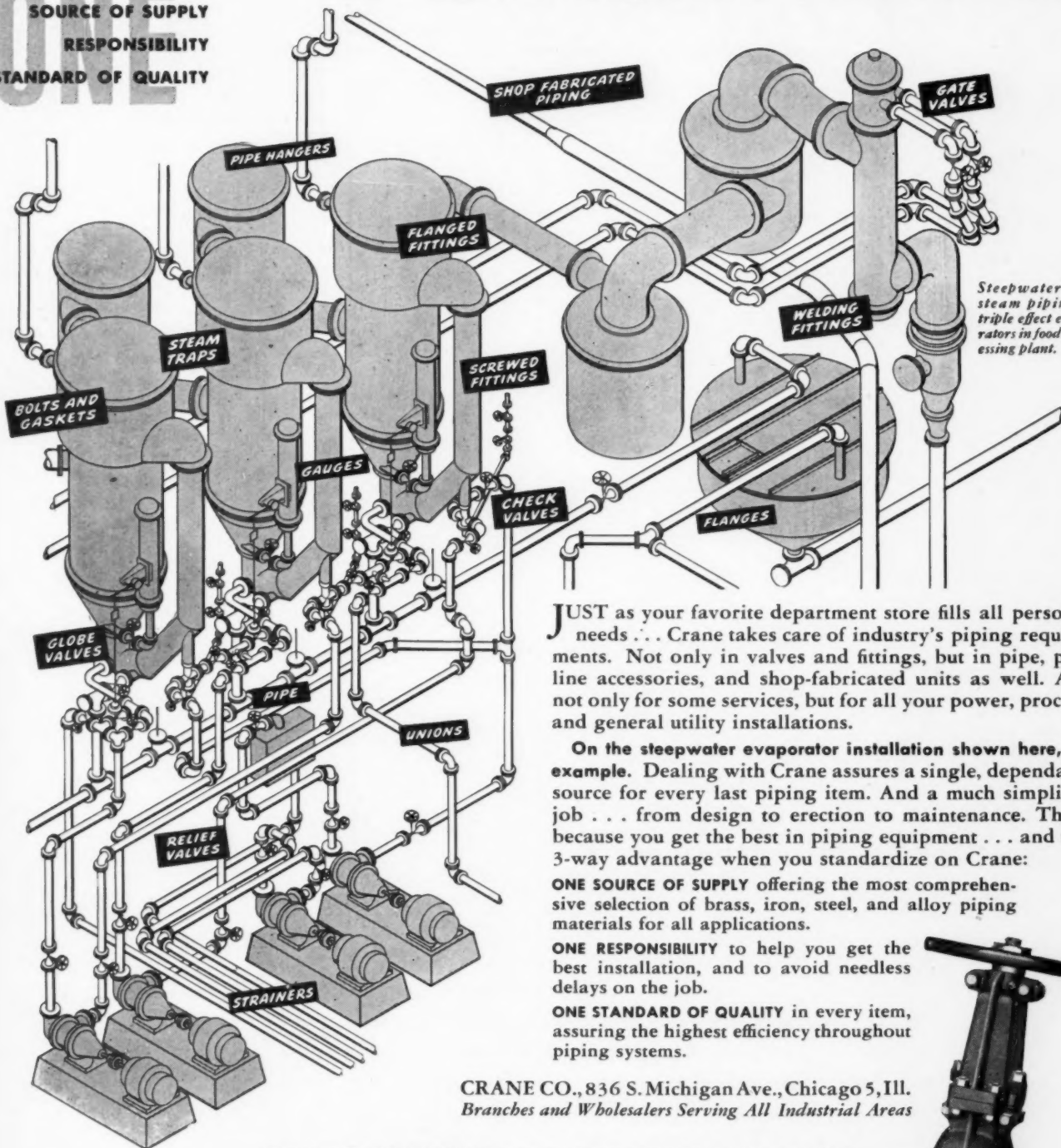
Jackson **AIRWAY** *Ventilated* **BUFFS**

*always have
and always
will -*



"Department store" for Piping equipment ... the complete CRANE Line

ONE
SOURCE OF SUPPLY
RESPONSIBILITY
STANDARD OF QUALITY



Steepwater and steam piping to triple effect evaporators in food processing plant.

JUST as your favorite department store fills all personal needs . . . Crane takes care of industry's piping requirements. Not only in valves and fittings, but in pipe, pipe line accessories, and shop-fabricated units as well. And not only for some services, but for all your power, process, and general utility installations.

On the steepwater evaporator installation shown here, for example. Dealing with Crane assures a single, dependable source for every last piping item. And a much simplified job . . . from design to erection to maintenance. That's because you get the best in piping equipment . . . and this 3-way advantage when you standardize on Crane:

ONE SOURCE OF SUPPLY offering the most comprehensive selection of brass, iron, steel, and alloy piping materials for all applications.

ONE RESPONSIBILITY to help you get the best installation, and to avoid needless delays on the job.

ONE STANDARD OF QUALITY in every item, assuring the highest efficiency throughout piping systems.

CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving All Industrial Areas

(Right) YOUR BEST CHOICE for many steepwater conditions . . . Crane No. 465½ Standard Iron Body Wedge Gate Valves with brass seats and stem. Ideal for wide standardization on steam up to 125 pounds; on water, oil, or gas up to 200 pounds. Non-rising stem and OS&Y types; screwed or flanged ends. Sizes 2 in. and larger. Ask your Crane Man about these valves . . . or see your Crane Catalog, p. 101-106.



EVERYTHING FROM . . .

VALVES • FITTINGS
PIPE • PLUMBING
AND HEATING

CRANE

FOR EVERY PIPING SYSTEM

Quality identified by a Trademark



TOUREK

BALL



JOINTS



MAKERS OF
PRECISION SCREW
MACHINE PRODUCTS

the recognized standard!

Years of experience in filling the needs of industry has enabled Tourek to develop a line of stock types and sizes of ball joints that meets virtually all requirements.

In those instances where special types are necessary, Tourek engineers and designers provide manufacturers with an invaluable source of expert assistance.

Tourek can supply your most exacting requirements for ball joints. Illustrated catalog showing stock types will be sent on request. Requests for information on special types will receive prompt attention.

J. J. TOUREK MFG. CO.
4701 West 16th Street, Chicago 50, Illinois

ESTABLISHED 1920

TOUREK
FAMOUS BALL JOINTS

SEAMLESS FLEXIBLE METAL HOSE



NEW "Uniflex" seamless flexible metal hose is made of a special alloy seamless bronze tube. The tube is formed into a uniform helically corrugated, flexible hose, retaining the maximum desirable characteristics of the original tube. The hose is encased in a high-tensile bronze wire braid, permanently attached to couplings. The fitting provides metal-to-metal seal by means of a seal produced between the fitting body and the spring washer effect of the hose itself. No brazing or packing is required. Once assembled, it remains permanently leak-proof. Literature available. *The Brockway Co., Naugatuck, Conn.*

FLAT TOP CONVEYOR CHAIN

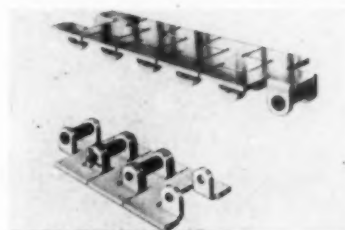


ILLUSTRATION shows flat top conveyor chain designed for use in packaging and handling operations in dairies, canneries, bottling and similar plants. Each link of the chain is the same and special coupling links are not needed. The top plate, which is the carrying surface, also acts as the side bar of the link, minimizing the number of parts. The chain is available in 1½" pitch and any width of top plate from 3 to 7½", in carbon steel or stainless steel. It will operate over No. 60 extended pitch sprockets or over extra width sprockets designed for use with the chain. *Wade-Morrison Co., 18401 Shaker Blvd., Cleveland, O.*

LOW H-P GASOLINE ENGINE



SECOND model of the Gladden "Bee-Line" engines, Model BB, has a power range of 2.5 to 4.3 hp. It is part of a line of 4-cycle, air-cooled gasoline engines up to 15 hp, now being developed. The engine's overall height is 23", width 15½", length 14". It occupies 2.9 cubic ft. Operating parts are made of the newer type of tough alloys. Light weight, simplified mountings and accessibility of controls are said to permit easy installation on any type of equipment in any location. *Gladden Products Corp., 635 W. Colorado Blvd., Glendale, Calif.*

(Please turn to page 160)

Why shut down to move one machine?



DO YOU reach for red ink when machines must be moved? Do you watch production take a dive because a whole line must be shut down to tap in one machine? And do you wince at the cost of rewiring to change a shop set-up?

Then check with Bulldog BUStribration DUCT for plug-in power that covers your whole plant.

Every ten-foot section of this modern electrical feeder system has ten convenient outlets. When a machine is moved the electrician need only raise the plug to the nearest outlet, snap its contact fingers over the bus bars and bolt the plug to the casing. He can

do the whole job in twelve minutes or less.

A single machine, or a dozen, can be relocated with no delays for new wiring . . . no interruption of power for the rest of the line.

Built in standardized, prefabricated sections, Bulldog BUStribration DUCT can be dismantled, moved and re-installed in new locations or combinations without scrapping a single bolt.

Call your nearby Bulldog Field Engineer for full information on this flexible, economical power system, or write Bulldog direct for descriptive folders.



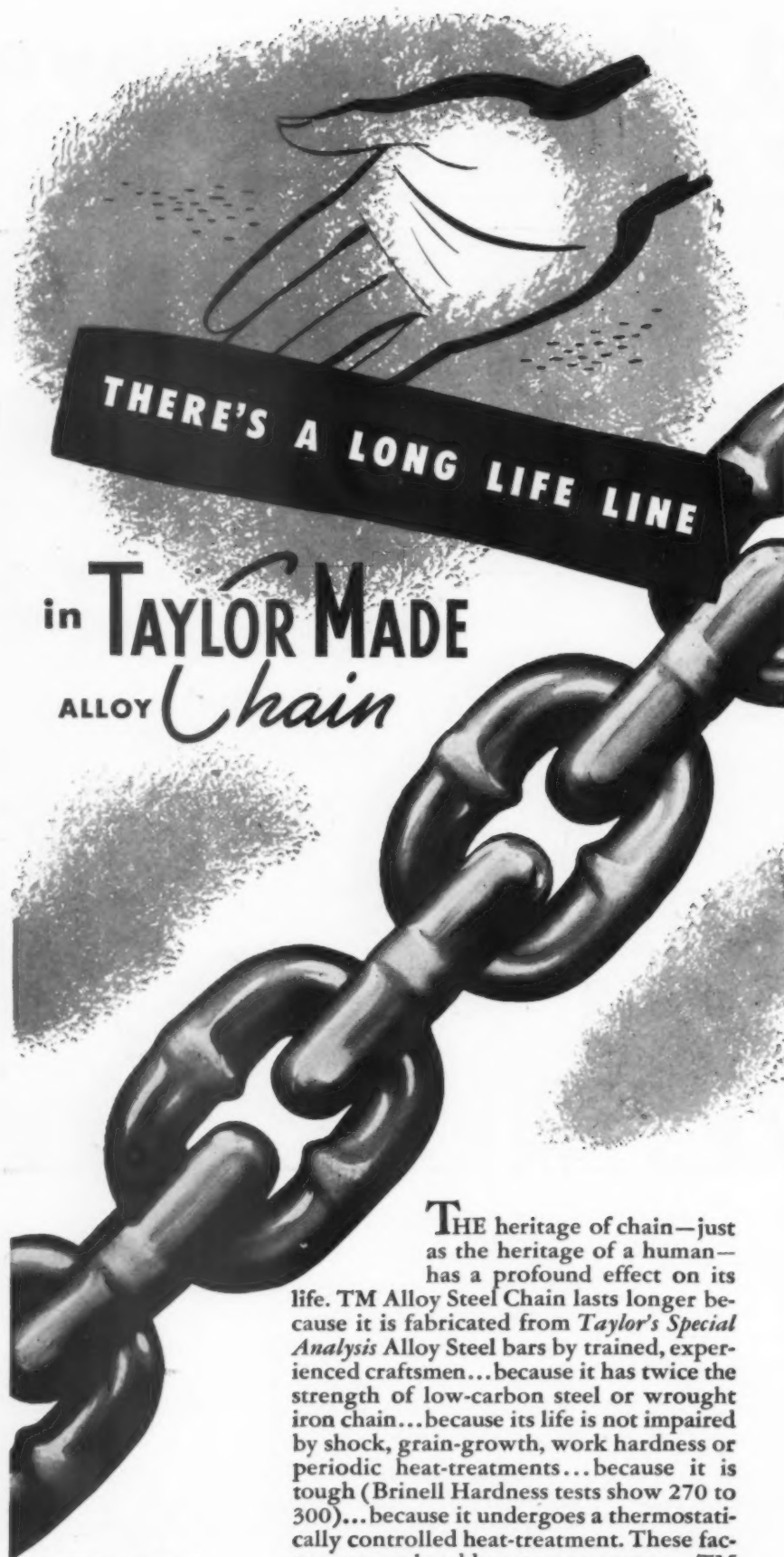
BULLDOG

ELECTRIC PRODUCTS COMPANY



Bulldog manufactures Vacu-Break Safety Switches — SoftFuse Panelboards — Superba and Rocker Type Lighting Panels — Switchboards — Circuit Master Breakers — "Lo-X" Feeder BUStribration DUCT — "Plug-in" Type BUStribration DUCT — Universal Trol-E-Duct for flexible lighting — Industrial Trol-E-Duct for portable tools, cranes, hoists.

DETROIT 32, MICHIGAN. FIELD OFFICES IN ALL PRINCIPAL CITIES. IN CANADA: BULLDOG ELECTRIC PRODUCTS OF CANADA, LTD., TORONTO.



"THE BEST BY TEST
SINCE 1873."

THE heritage of chain—just as the heritage of a human—has a profound effect on its life. TM Alloy Steel Chain lasts longer because it is fabricated from *Taylor's Special Analysis* Alloy Steel bars by trained, experienced craftsmen...because it has twice the strength of low-carbon steel or wrought iron chain...because its life is not impaired by shock, grain-growth, work hardness or periodic heat-treatments...because it is tough (Brinell Hardness tests show 270 to 300)...because it undergoes a thermostatically controlled heat-treatment. These factors can only add up to one answer...TM Alloy Steel Chain is the best buy in chain. Contact your mill supply distributor or write the factory today for prices and complete specifications. No obligation.

S. G. TAYLOR CHAIN COMPANY
Box P-9 Hammond, Indiana

RADIUS AND ANGLE WHEEL DRESSER



RADIUS and angle wheel dresser can form concave or convex radii with any two angles tangent in one continuous motion without stopping. With new micro diamond adjuster the diamond can be set to enths for accuracy. All wearing parts are hardened and ground. The dresser features micrometer feed to the wheel for precision dressing. Tip-back column eliminates necessity of removal of dresser from table. The dresser is dust-proof, and can be had with a sub-base for "T" slot machines. *Matco Tool Co., 2834 W. Lake St., Chicago 12, Ill.*

BAKELITE BASE INSULATING VARNISH

NEW, all-purpose insulating thermosetting varnish, with Bakelite base, is made for use on all types of wound coils. Known as Synthite AJR-7, it cures rapidly at temperatures lower than required for most varnishes of a similar type, manufacturer claims. The varnish is adapted for use on all modern types of coated magnet wire such as Formvar, Formex, nylon and glass. It is applied by either atmospheric dip or vacuum impregnation, and can be baked under infra-red or in conventional gas or electric heated ovens. *John C. Dolph Co., Dept. 33, 1060 Broad St., Newark 2, N. J.*

ROTARY WORK TABLE

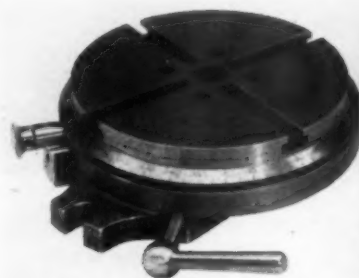


ILLUSTRATION shows 5"-diameter rotary work table for engraving, profiling, graduating, milling, and drilling on circular name plates, dials, round dies, or any object requiring circular or semi-circular cutting. The table is adaptable to virtually any engraving machine and can be used on small production milling and drilling machines, it is claimed. Outer rim of the turn-table is marked in degrees, and every degree notched for division by engaging the index unit. Top and bottom surfaces are ground parallel. The working surface has four tee-slots for $\frac{1}{4}$ " bolts, and a $\frac{5}{8}$ "-diameter hole for centering the work with a stud. Overall height is $1\frac{3}{4}$ ". Literature available. *H. P. Preis Engraving Machine Co., 157 Summit St., Newark 4, N. J.*

(Please turn to page 162)

Here are on-the-spot facilities...



... serving the magnificent Metal Working Industry

The Machine Tool Builders Show in Chicago will reveal the latest developments in machine tool design and practice. D. A. Stuart Oil Co. products will play their part in helping these machines produce peak efficiency and smooth performance. Stuart offers you the cutting fluids and special lubricants to assure this performance... with complete laboratory facilities... a modern factory with ample production and delivery facilities... products second to none... and a location that's convenient for delivery.

Write, wire or phone that we may serve you, too... and when you're in Chicago, we'd be glad to have you visit us!

PHONE ROCKwell 7100

D. A. Stuart Oil Co.
EST. 1865 LIMITED
2727 SOUTH TROY STREET, CHICAGO 23, ILL.



We suggest that you clip this page as a reminder of the Stuart facilities available for your use during, and after the Chicago Show...

BOOTH 317L

STUART service goes with every barrel

STURACO DASCOLENE *ThredKut* EXCELENE DASCO 34
CODOL *SOLVOL* SUPERKOOOL KLEENKUT

OIL-FILLED BENCH STONES COST NO MORE THAN DRY STONES

but...



...THEY SHARPEN BETTER!

Oil filling is a built-in extra service feature of Crystolon Bench Stones—at the price of regular dry stones. And this is important, because bench stones are supposed to be used with oil. Oil makes them cut faster and cooler and produces a better cutting edge. Oil also helps them resist glazing or filling.

But oil filling is a messy job at best—and it has to be done right. The oil must penetrate the pores of the entire stone. And, unless the right kind of oil is used, the surface of the stone will gum.

Crystolon Bench Stones are made of genuine Norton silicon carbide abrasive, vitrified bonded and oil-filled at the factory for your convenience and for better sharpening. Ask your Distributor to furnish oil-filled Crystolon* Bench Stones for extra service at no extra cost.

* For oil-filled aluminum oxide bench stones, specify "Indiq."

BEHR-MANNING • TROY, N.Y.

(DIVISION OF NORTON COMPANY)

ALSO QUALITY COATED ABRASIVES SINCE 1872

HAND POWER DRILL

NEW ¼" palm drill features a hand-fitted pistol grip. Incorporated in the grip is a trigger switch for intermittent use which can be locked for continuous operation. Equipment consists of 3-jaw Jacobs chuck with key and key holder, and 15 feet of 3-conductor rubber covered cable and plug. Key is permanently attached to cable. Drill capacity is ¼" in steel and ½" in hardwood. 110 volt a-c, d-c motor drives the drill at 1100 rpm with full load, 1900 rpm with no load. Motors in other voltages can be supplied. *Bradford Machine Tool Co., Cincinnati, O.*

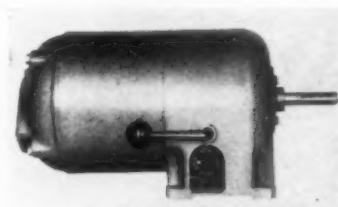


TOOLMAKER'S SPOTLIGHT



SELF-CONTAINED Opti-Spot toolmaker's spotlight operates on 110 volt a-c, voltage being reduced by a transformer. The light cell contains a focusing condenser for varying size of spot. The lamp is 6 volt automotive type, with beam to permit use of lamp up to 6 ft. from work, and negligible heat. Two models: "A" with 16" flexible tubing between lamp and base to maintain adjustment of position, and "B" with 18" rubber covered cord. *Benton Co., 351 S. LaBrea Ave., Los Angeles 36, Calif.*

SINGLE-PHASE GEARSHIFT DRIVE



FOUR-SPEED, Type R, Lima gearshift drive, with integrally mounted single phase motor, built to drive machinery requiring selective speeds. Drives are available in sizes of ½ hp at 1200 rpm and ¾ hp at 1800 rpm. Gear ratios are 1 to 1, 1.33 to 1, 2 to 1, and 4 to 1. The units will operate on 115 and 230 volts a-c, 50 and 60 cycle. Mechanically, the single phase and polyphase units are identical. *The Lima Electric Motor Co., 4401 Findlay Road, Lima, O.*

(Please turn to page 166)

Another Great Addition to the POST-WAR BLACK & DECKER Bench Grinder Line!

Look at These ALL-STAR Features of the NEW 10" BENCH GRINDER

Here's another brand new tool to join Black & Decker's postwar Bench Grinder family! Like the 6" Heavy-Duty model recently announced, this Black & Decker 10" Bench Grinder is packed with up-to-the-minute features. And its 1-H.P. motor gives you *plus* power and capacity to handle the bigger jobs in your shop. Many years of experimental development have gone

into this tool . . . to help you step up the tempo of your tool sharpening, heavy-duty grinding, wire brushing, buffing, burnishing, polishing and finishing. New streamlined Bench Grinder Pedestals permit spotting the grinding unit anywhere in the shop at convenient working height. Ask your nearby Black & Decker Distributor for complete information today. For information on other Black & Decker Portable Electric Tools, write for your free copy of our catalog to: The Black & Decker Mfg. Co., 664 Pennsylvania Ave., Towson 4, Maryland.



LEADING DISTRIBUTORS EVERYWHERE SELL

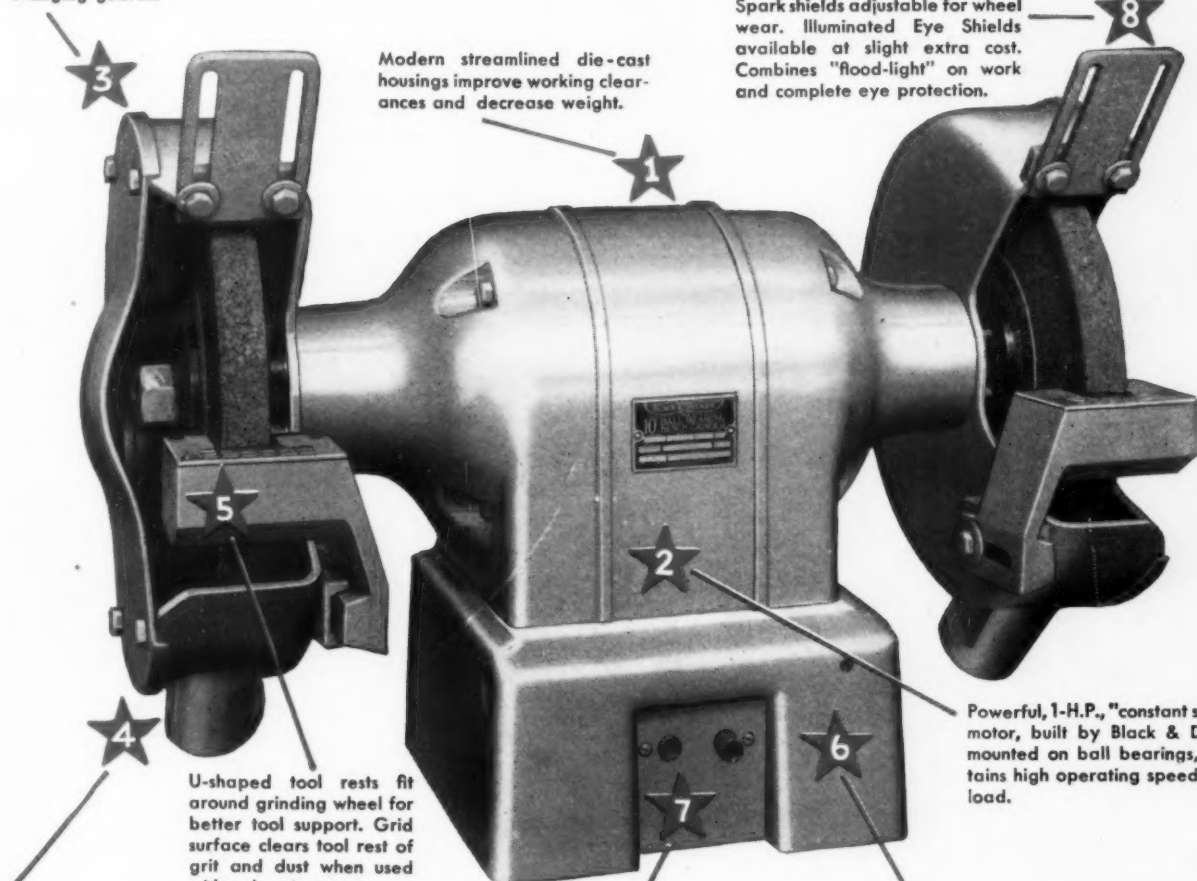
Black & Decker

PORTABLE ELECTRIC TOOLS

Wheel guards and covers made of steel to give extra protection. Ample room for standard three-section wire wheel brush without changing guards.

Modern streamlined die-cast housings improve working clearances and decrease weight.

Spark shields adjustable for wheel wear. Illuminated Eye Shields available at slight extra cost. Combines "flood-light" on work and complete eye protection.



U-shaped tool rests fit around grinding wheel for better tool support. Grid surface clears tool rest of grit and dust when used with exhaust system.

Powerful, 1-H.P., "constant speed" motor, built by Black & Decker, mounted on ball bearings, maintains high operating speed under load.

Wheel guards include outlets that can be connected to exhaust or dust-collecting systems.

Two-pole, push-button switch is recessed in housing to prevent accidental contact or damage, yet remains easy to reach.

Machined hole in base of Grinder provides for mounting attachments.



**You save money
right from the start!**

Because most Rubberset Nylon Brushes cost less than hog bristle brushes. Much less when you consider all the time and trouble they save you!



**You don't have to
break in the brush!**

Rubberset Nylon Brushes come to you already broken in with the "chisel tip" that ordinary brushes acquire only after hours of tedious effort!

Picture You ^{with the}

Rubberset Hog Bristle Brushes are world-renowned, too, for their superb quality and performance. Since 1873, in fact, our famous trade mark name Rubberset has stood for "The Finest in Brushes."

Rubberset Company—56 Ferry Street, Newark 5, New Jersey—Established 1873—Factories: Newark, N. J.; Salisbury, Md.; Gravenhurst, Ont., Canada—Branches: Los Angeles, California; St. Louis, Missouri.



You pick up more paint!

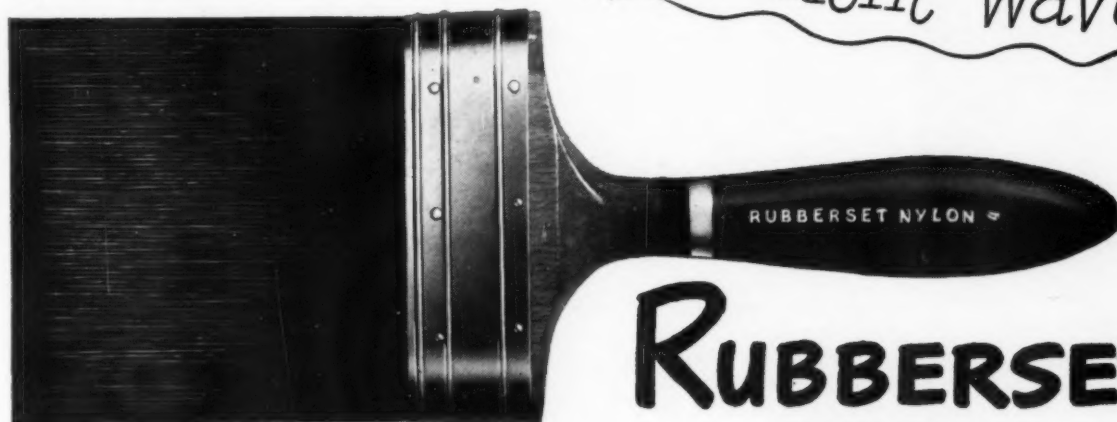
Rubberset's exclusive permanent wave development means you pick up more paint than with best hog bristle brushes. *And you paint more surface per dip—9.5% more by independent tests than with top-quality hog bristle brushes!*



You get 5½ times more service!

Bristle wear tests show that this great brush lasts up to 5½ times longer than hog bristle brushes. That's 5½ times less wear—5½ times more service!

brush with the permanent wave...*



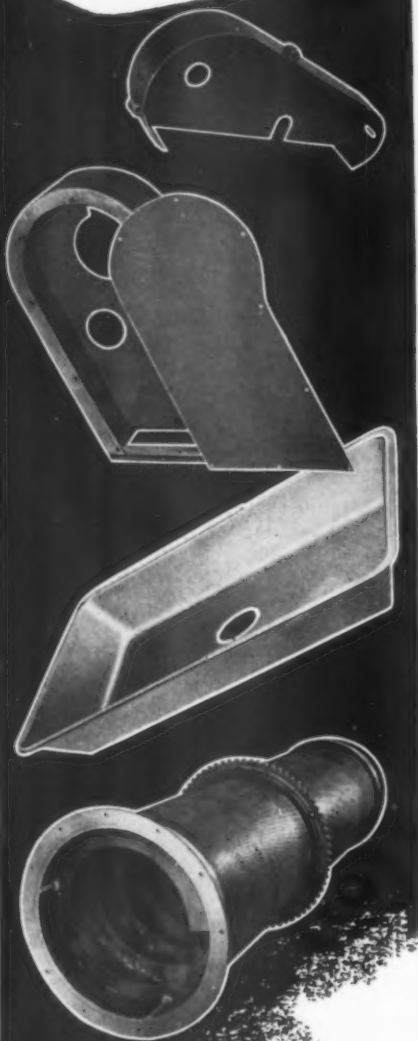
**RUBBERSET
NYLON**

*Patent Applied For

Made only by the Rubberset Company

LITTLEFORD FORMS STEEL for All Your Needs

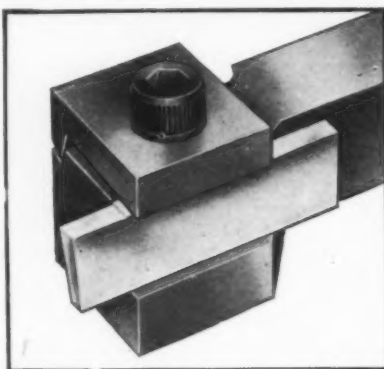
In the hands and machines of our skilled engineers and workmen, sheet and plate steel assumes whatever form your business demands. We make bins, machine pans, stacks, breechings, tanks. Also chutes, guards, vats, machine bases, special metal parts. In 65 years we've really learned how to serve industry. Let us help you!



LITTLEFORD

446 E. Pearl St.
LITTLEFORD BROS., INC.
Cincinnati 2, Ohio

CLAMPED-IN KENNAMETAL BLADES



NEW clamped-in Kennametal blade tool for single grooving or cutting-off operations, such as are done on turret lathes, is announced. Five standard styles RG (right hand) and LG (left hand) are available in a wide variety of holder and blade sizes. Blade can be extended after each resharpening until half of the length has been utilized. The blade is ground for normal grooving operations, with zero side rake and zero cutting edge angle. The latter may be reground to the usual 5° for cutting-off operations. Kennametal, Inc., Latrobe, Pa.

SKID AND SKID BOX

PHIL-TIER Skid (B in illustration) and "Phil-Tier Box" (A in illustration) are made for hauling or storing all types of industrial parts products, scrap, etc., and can be used with either platform or fork lift trucks. The skid is an open unit providing access to materials when skids are stacked. The box is used for storing or moving materials that do not lend themselves to neat piling. Features include cupped feet and decks of double corrugated steel plate. Units can be furnished to required dimensions. Phillips Mine & Mill Supply Co., 2227 Jane St., Pittsburgh 3, Pa.



HORIZONTAL BELT CONVEYOR



STANDARDIZED Levelbelt horizontal belt conveyor of a design built for stock, is available in lengths of 21' to 161', and in standard heights of 28", 32" and 36" above the floor. The drive mechanism is also standardized for power up to 1 hp to operate at a speed of 60' per minute in either direction. The takeup for maintaining belt tension is incorporated with the drive mechanism. A roller type bed is used with 1.9" diameter ball bearing rollers placed at 8" centers. The conveyor is available in two standard widths of 14" and 24" belts. Standard Conveyor Co., North St. Paul 9, Minn.

(Please turn to page 168)

HOSE FOR USE IN ANY INDUSTRY!

Light, Strong, Flexible

FLEXAUST

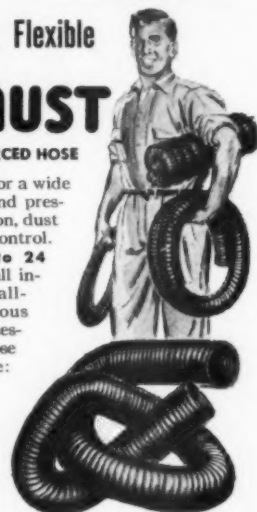
SPIRAL-REINFORCED HOSE

Flexaust is suitable for a wide variety of suction and pressure uses in ventilation, dust collection and fume control.

SIZES 1 1/4 inches to 24 inches. Write for full information on this all-purpose hose. Various Flexaust types, accessories, and other hose types also available:

BLOFLEX
Non-reinforced
collapsible

PORTOVENT
Ring-reinforced
retractable



AMERICAN VENTILATING HOSE COMPANY

Dept. A-6, 15 Park Row, New York 7, N. Y.

Branch Offices: New Orleans, La., San Francisco, Calif., Washington, D. C.

Plants: Amesbury, Mass. • Seattle, Wash.

"Safety" LAMP CHANGER

SAFE . . . No falls from ladders or shaky boxes . . . keep both feet on the floor and change those hard-to-reach bulbs!

EFFICIENT . . .

Rubber Changer Head (available in sizes to fit 10W to 1500W screw type lamp bulbs) slides over bulb and grips it firmly . . . a twist of the wrist and that dead bulb is out!

HANDY . . . Reverse the Changer Head on the Sectional Pole and the tapered base becomes a Broken Base Remover!



2 IN
1

Base Remover

NO DANGER of shock or cut fingers from bulbs which break off in the socket!

TAPERED END of Rubber Changer Head fits snugly inside broken lamp base . . . twist the pole and friction brings it out!

HARD WOOD SECTIONAL POLES in 4 and 6 foot lengths can be fitted together to reach normally hard-to-get-at bulbs up to 30 ft.

Send for NEW Descriptive Folder and Price List!

"Like the Grip of Your Hand"

G. R. Chadsey Mfg. Co., Inc.
Dept. P-901
HARTFORD 1, CONN.

Prefab Shelves for...

STOREROOMS & WAREHOUSES



HINES-SHELF



Engineered to carry almost any load which can be placed on the shelves. One basic unit—3 ft. wide, 34 in. high and 11½ in. deep—will carry over 600 lbs. evenly distributed over the three shelves—9 sq. ft. of shelf area! Item comes knocked down and completely carton packed for easy handling.

Here's the answer to all your shelving problems. Hines-Shelves can be assembled by unskilled labor with immense savings in time, labor and money. Ponderosa Pine frame is assembled with a patented hardware bracket and the shelf surface is made of durable Masonite Tempered Presdwood.

BUILD UP OR SIDWAYS!

The shelves at the right were made with 2 Regular Units and 2 Extension Units—overall measurement of 68 in. high, 6 ft. wide and 11½ in. deep—36 sq. ft. of shelves at approximately 60c a sq. ft. in most markets.



EDWARD HINES LUMBER CO.

2431 So. Wolcott Ave., Chicago 8, Illinois (9P47)

Please send me complete information on Hines-Shelves for ☐ warehouse, ☐ stockroom, ☐ store, ☐ displays.

NAME.....

ADDRESS.....

CITY.....STATE.....

Executive Inquiring.....

Special Engineering!

Where quantities needed are large enough to warrant special production, Hines-Shelves can be made in special sizes.

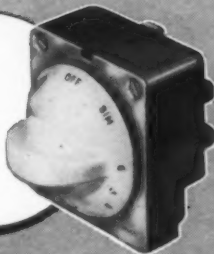
EDWARD HINES LUMBER CO.

2431 So. Wolcott Ave., Chicago 8, Ill.

Pick

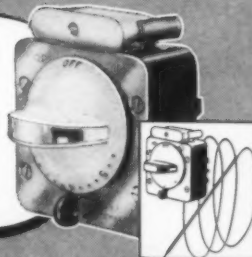
SWITCHES

Selector and heating circuits. Rotary to 8 positions. Ratings to 15A., 230 V., A.C.



THERMOSTATS

Ratings to 35 A., 230 V., A.C.; operating temperatures to 550°.



PILOTS

Red, green or clear neon, spring mounting, rated to 230 V. Also screwbase candelabra.



SNAP SWITCHES

Rugged and dependable. Mounting hole 2 1/32" x 1 7/32". Spring mounting requires no screws. 10 A., 230 V., A.C.



CONVENIENCE OUTLETS

To match neon pilots. Need mounting holes only 2 1/32" x 1 7/32" and 1" depth. Spring mounted.



"Diamond H" electrical equipment is designed and built to give top appearance, dependable performance and long life. Consult us on your requirements.

THE HART MANUFACTURING COMPANY
207 BARTHOLOMEW AVENUE, HARTFORD, CONN.



ELECTRIC LABEL CODER



ELECTRIC label perforator, designed for coding labels and wrappers, is known as the 370. It is about 1/10 the weight and 1/2 the cost of previous electric perforators of the same speed and capacity, according to the manufacturer. The machine can be furnished to actuate on insertion of items being perforated, to trip with a foot switch, or to trip automatically at a specified number of cycles per minute. Cycle tripping is accomplished by a small synchronous motor. Illustration shows 370 with cycle tripping attachment plugged in. *Cummins Business Machines Corp., 4770 Ravenswood Ave., Chicago, Ill.*

RUBBER-FRAME SAFETY GOGGLE



NEW rubber-frame 705 super-vent goggle has a nosepiece with an inhalation and exhalation valve to prevent fogging and steaming of the goggle's large acetate single lens.

The goggle is designed for wear on jobs requiring the handling of acids and caustics. It protects against chemical splashes, spray and impact of foreign particles and exposures to fine dust concentrations. The frame is of non-irritating natural rubber, and conforms to the contours of the face. Large size of the lens provides wide-angle vision. *American Optical Co., Southbridge, Mass.*

ONE HP A-C MOTOR



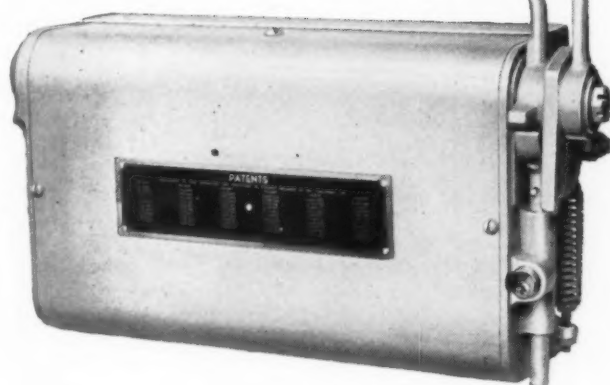
NEW 1 hp a-c motor has starting torque three times as great as the full load torque to overcome dead load. Power equal to twice the full load torque is available to take care of momentary overloads. It operates on either 115 or 230 volts a-c by connection changes. Single and polyphase types are available. Other features include drip-proof, grease-proof armor; takes line voltage variations from 104 to 126 volts on lower setting, and from 207 to 253 volts on higher setting, with full rated power delivered within these limits. Bulletin No. 47-1 available. *Eicor, Inc., 1501 West Congress St., Chicago 7, Ill.*

(Please turn to page 170)

Elwell-Parker leads again with




E. P. E.
ROLOTAC
CONTROLLER



*the electric truck controller
based on an entirely new principle!*

Elwell-Parker has developed the ROLOTAC controller to withstand the heavier loads, and more frequent starting and stopping encountered with modern trucks. ROLOTAC embodies a new principle for super-speed—the trigger snap and rocking action assure an instant make and break at the tips and not on the contact working surface. The breaking of heavier currents is handled by magnetic blowout. ROLOTAC has larger contacts and greater current capacity. It conserves power, requires less service, and assures continuous handling of larger loads in less time. ROLOTAC includes all well-known E-P safety features, such as the "dead-man" control. It is a worthy companion of the E-P built, Class B Motor—both can take all the power the recommended batteries will furnish.

The most gruelling tests prove ROLOTAC is an extra-husky controller. It has seen two and one-half years actual operation, among others, in one forge shop for over 20 hours per day with over 7,000,000 make and break operations.

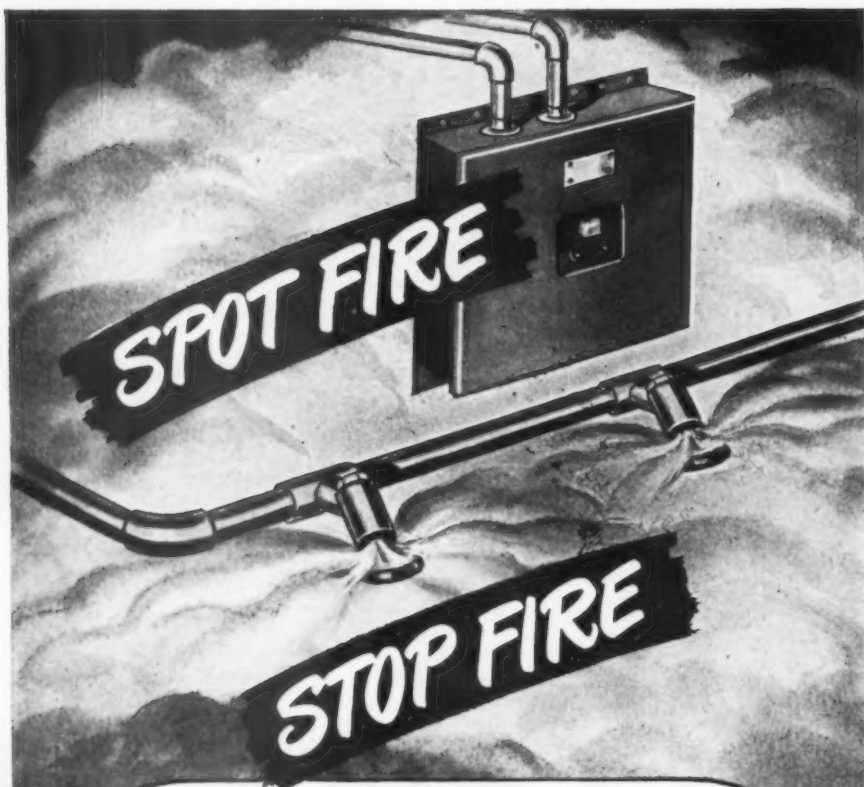
Have your  man give you full details on this newest superiority of Elwell-Parker Trucks. The Elwell-Parker Electric Co., 4519 St. Clair Ave., Cleveland 14, Ohio.

10 SUPERIORITIES OF **ROLOTAC**

1. Super-swift snap action.
2. Arc blowout feature.
3. Tamper proof, locked mechanism.
4. Shock proof construction.
5. Interchangeability of fingers and contacts.
6. Extra large contacts.
7. Positive, efficient transfer of current.
8. Accommodation of no plug feature.
9. Four speeds in both directions.
10. No adjustments required.

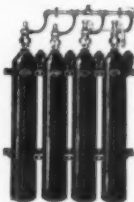
ELWELL-PARKER
POWER INDUSTRIAL TRUCKS

Established 1893



All in Seconds

with **C-O-Two**



Record or blueprint vaults, fur vaults, flammable liquid stores, material supply rooms and other areas where constant attendance is not feasible are made safe from fire with C-O-Two. A C-O-Two Smoke Detecting System (approved by Underwriters' Laboratories) continually draws air from the protected space, picks up the first thread of smoke and immediately sounds the alarm. Then the C-O-Two automatic fire extinguishing system swings into action, pouring cold, dry, carbon dioxide gas into the space. The fire is out in seconds after it began.

Two or more spaces may be protected with one C-O-Two system; a directional valve releases clouds of carbon dioxide gas into the threatened area. Doors, windows and ventilators may be closed and machinery cut off by pressure-operated releases operated by the system.

C-O-Two is safe, clean, modern fire protection; it is non-conducting, non-damaging, non-freezing. Safe to use on electrical equipment and flammable liquid fires. Harmless to metals, motors, wiring, finishes, paper and textiles.

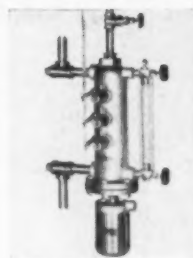
Protect hazardous spots in your plant with fast, positive C-O-Two. Write us for further information.



C-O-Two FIRE EQUIPMENT COMPANY
NEWARK 1, NEW JERSEY

Sales and Service in the Principal Cities of U. S. and Canada
AFFILIATED WITH PYRENE MANUFACTURING COMPANY

WATER COLUMN-CONTROLLER



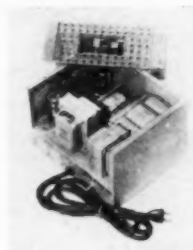
NEW Magnetrol unit combines both water column and multi-stage boiler water level controller. Advantages claimed are lower first cost, easier installation, space saving, more reliability because of elimination of cross-connection piping, and reduction in maintenance because only one blow-down is required. Made in two models, W-126 for pressures up to 125 lbs. and W-251 for pressures up to 250 lbs., the unit combines all the features of the magnetic operating principle found in the standard multi-stage Magnetrol. Fred H. Schaub Engineering Co., Inc., 2110 South Marshall Blvd., Chicago 23, Ill.

DIFFERENTIAL AIR ENGINE



ILLUSTRATION shows one of a new line of differential air engines for general industrial applications. The differential principle employed permits operation with only one controlled air line. Positive air power is obtained in both directions, so that operating at 100 lbs air pressure, the engines are available in sizes to deliver "in-stroke" power from 100 to 1335 lbs, and "out-stroke" power from 105 to 1070 lbs. Other features are: non-locking piston rod, automatically adjusted air seals, and elimination of piston binding. Maximum space required for largest engine is $29\frac{5}{8} \times 9\frac{1}{4} \times 8$ inches. Bulletin DC-201 available. National Pneumatic Co., Industrial Sales Division, Rahway, N. J.

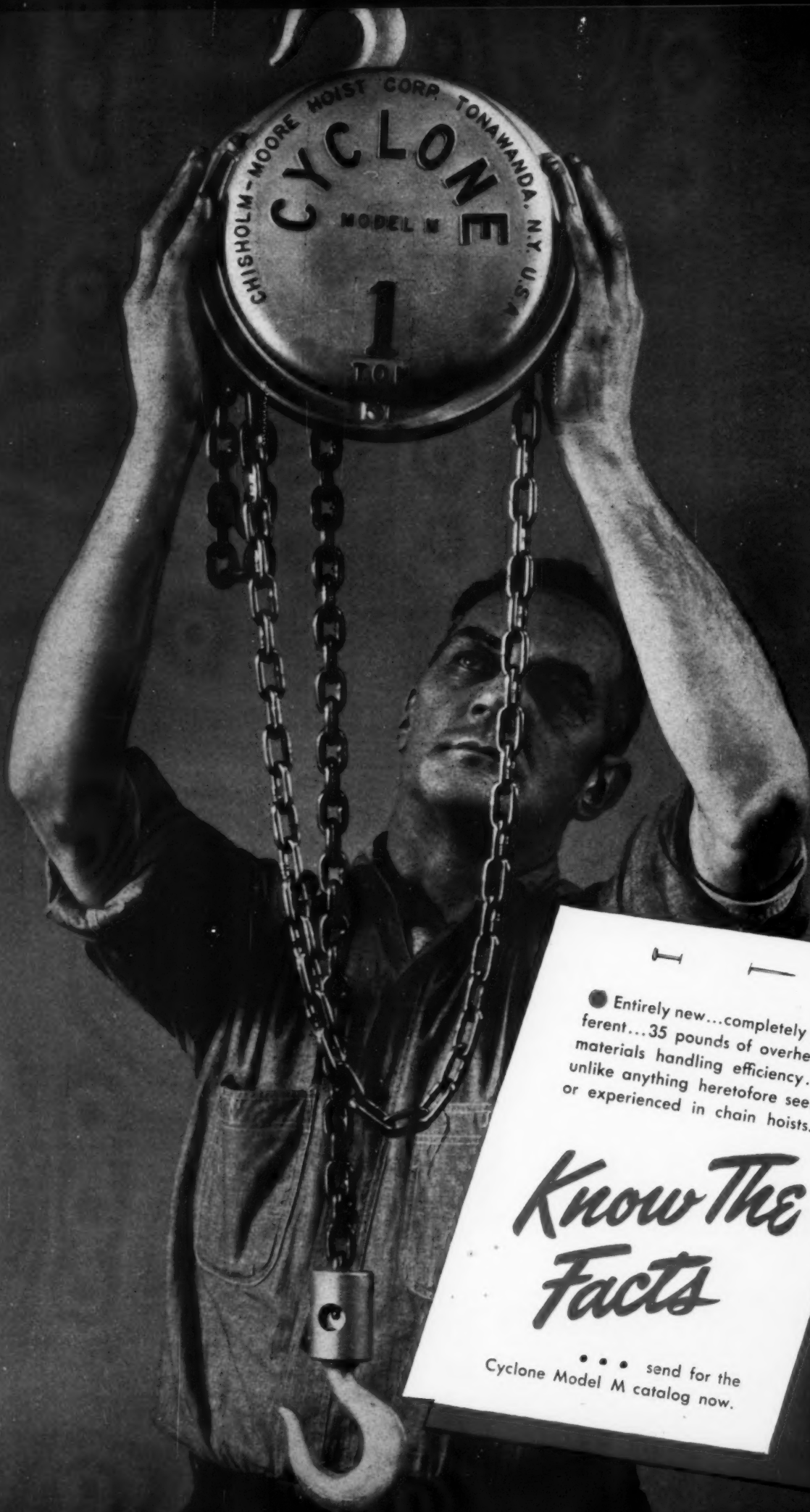
PORTABLE AC VOLTAGE REGULATOR



GENERAL purpose portable a-c voltage regulator features electronic control circuits and is designed for component applications with electrical equipment utilizing light loads. Designated

Model 150, it has an input voltage range of 95 to 125 volts a-c with an output of 115 volts. Regulation accuracy is $\frac{1}{2}$ of 1% and maximum harmonic distortion is 5%. It has a load range of 10% to 100%, frequency range of 50 to 60 cycles and a power factor range of 70% lagging to 60% leading. Maximum recovery time is six cycles. It measures $9 \times 7\frac{1}{2} \times 6$ ". Sorensen & Co., Inc., 375 Fairfield Ave., Stamford, Conn.

(Please turn to page 172)



● Entirely new...completely different...35 pounds of overhead materials handling efficiency...unlike anything heretofore seen or experienced in chain hoists.

Know The Facts

... send for the Cyclone Model M catalog now.



"His staff simply worships him since he installed
General Electric Water Coolers."

Want to boost employee morale? General Electric Water Coolers will help. They cost so little to operate, too. Ask your

General Electric Dealer for full information. *General Electric Company, Air Conditioning Dept., Section 7299, Bloomfield, N. J.*

GENERAL  ELECTRIC
Water Coolers

PATTERN,— CRATING LUMBER TIMBERS ★ PLYWOOD

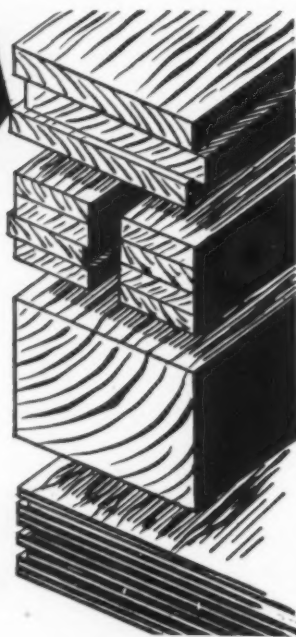
Here's Lumber Service Made to Order

Pattern Lumber — from old growth logs. Select quality, Mahogany, White Pine, Kiln-dried in our own plant. Cut to length.

Crating Lumber — for safe, economical shipments. Lengths, thicknesses practical for your purpose.

Timbers — from the tall fir country. Cut, trimmed to your needs. Teco Connectors, timber engineering data.

Plywood — wide variety of sizes, kinds, laminations. For interior, exterior use. Ideal for patterns. Your one order gets the attention of all three of these big lumber suppliers.



**UNION
WHOLESALE**
YOUNGSTOWN 8, OHIO
Phone 4-4406

DOUGHERTY
CLEVELAND 5, OHIO
WILLOW RANCH, CALIF.
Phone Diamond 1200

KEYSTONE
PITTSBURGH 3, PA.
Phone HEmlock 0700

LUMBER COMPANY

NEW BELT GRINDER MACHINE CONTOURS



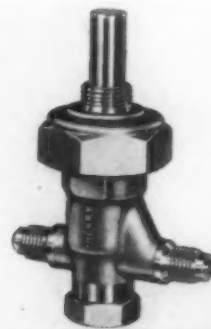
GRINDING and polishing of contours is accomplished on the Porter-Cable "C-6" belt grinder by a flexed abrasive belt that approaches and leaves a formed contact roll at a slight angle.

The belt "drapes" itself into the pattern on the roll and grinds-polishes the pattern sharply. The pattern is turned into the contact roll, which is made of sisal and latex, and holds a pattern indefinitely. The grinder requires a space 26" x 38" and accommodates a 148" belt. Its contact roll is an idler, and heat, motor and shaft vibration are thereby avoided. Surface speed of the abrasive belt remains constant, regardless of diameter of the contact roll. *Porter-Cable Machine Co., Syracuse, N. Y.*

WOOD JOINT GLUE FORMS PERMANENT BOND

FEDERAL wood joint glue is a resin emulsion that is used cold, eliminating the heating required with animal glue. It possesses immediate setting properties, forms a permanent bond that dries to commercially waterproof film, and works with either hard or soft woods. According to manufacturer, tests have shown that joints made with the glue are stronger than the wood itself, the joint remaining intact when the wood was split. *Federal Adhesives Corp., 640-646 Dean St., Brooklyn 17, N. Y.*

PUSH-BUTTON PACKLESS VALVE



NEW type push-button packless valve has a forged brass body and is suitable for handling any substance not corrosive to brass. The valve is normally open and is designed for either manual or automatic instantaneous valve operation, and where leakage around conventional packing would be objectionable. It has a renewable disc, renewable diaphragm, and a threaded collar around the push button, permitting mounting through a flush panel opening. It is suitable for pressures up to 100 lbs., and can be furnished with male SAE, IPS, or female solder connections in sizes 1/4" through 1/2". *Henry Valve Co., 3260 W. Grand Ave., Chicago 51, Ill.*

(Please turn to page 174)

Get Your Right Production Speeds

FASTER!!!

• PACKAGING
• ELECTRONICS • ELE

PAPER •
CHEMICAL
• NG • CONVEYORS •
PLASTICS • POLISHING

• BOXING • FANS • METALS • MILLING • WINDING • CANNING •

POLISHING • TEXTILES • METALS • CHEMICALS •

CHEMICALS •
• P •
POLI •
•
WINDING
CHEMICAL

1/4 to 3/4
hp

Model A
Ratio 16 to 1;
speed range
215-3450
(with 1725 rpm input)

1 to 3
hp

Model C
Ratio 9 to 1;
speed range
400-3600
(with 1725 rpm input)

2 to 5
hp

Model D
Ratio 8 to 1;
speed range
360-2880
(with 1725 rpm input)

2.8 to 7 1/2
hp

Model E
Ratio 6 to 1;
speed range
400-2400
(with 1725 rpm input)

IRON
MILLI
• W
• FA
• NG
IG • PACKAG
• WINDING

Worthington Allspeed Selectors are providing best production speeds with instant, stepless, precision control on machines where speed adjustments are desirable to: (1) Suit type of material being fabricated; (2) Control flow of material being processed or packaged; (3) Suit operators' abilities; (4) Maintain, smoothly, a constant speed suited to each individual job run. In getting the *right* speed for each requirement, most users report production increases from 50 to 200%!

Added Sizes, Bigger Stocks, Serve More Applications

You can now choose a Worthington Allspeed Selector from a wider hp range — 1/4 to 7 1/2 — four sizes with the same salient features: accessibility . . . adaptability to any machine, new or old . . . ball bearings throughout . . .

rugged construction, typically Worthington. And Worthington's vast production facilities assure prompt deliveries.

Call Your Nearby Worthington Distributor

Get his quick, expert aid in choosing the right size and type of Selector, or write us direct for the Allspeed Selector Bulletin. Read why in variable drives, too, *there's more worth in Worthington*. Worthington Pump and Machinery Corporation, Merchandising Division, Harrison, N.J. 36 District Offices throughout the U.S.

SIMPLE . . . COMPACT TROUBLE-FREE



Tandem-belt design provides smoothest possible operation . . . exclusive, automatic, positive belt-tensioning . . . highest speed ratios in smallest space . . . only drive not requiring dismantling of unit to change belt.

WORTHINGTON



**PRODUCTS
BASED ON
MARKET
RESEARCH**

Centrifugal
Pumps



Rotary
Pumps



Steam and
Power Pumps



Vertical and
Horizontal Compressors



Multi-V-Drives



Variable Speed
Drives



A size, style and type for every industrial requirement.



For Emergency Repairs

**...weld cast iron with Ampco-Trode 10
—save time and money...**

Typical of the way Ampco-Trode 10 saves money for its users is this tricky repair job. This cast-iron road-grader drive housing was badly damaged when a drive shaft broke. Replacements were not available. Ampco-Trode 10 took over. Only a slight preheat was necessary so that the welder had no trouble in handling the casting. All joints were V'd out and the welding done in two passes — once with an $\frac{1}{8}$ " rod and again with $\frac{3}{16}$ " rod.

One of the breaks passed through a machined flange. But the fact that Ampco-Trode 10 provided a machineable deposit as well as good strength and ductility solved this problem.

You, too, can save time and money with Ampco-Trode 10. This all-purpose aluminum bronze electrode gives you these important welding advantages:

- **Welds dissimilar metals**—steel to clean cast iron; steel or cast iron to bronze, brass, and copper; and all these to nickel alloys.
- **Ideal for bearing applications and overlays** — where hardness and resistance to wear are essential factors.
- **Resists corrosion** — this quality is extremely useful when fabricating process-industry equipment.

Get a supply of these easy-to-use, money-saving aluminum bronze electrodes today. See your nearest Ampco distributor. Write us for latest Ampco-Trode 10 bulletin giving additional facts.



Ampco-Trode 10 is a product of

Ampco Metal, Inc.

Department P-9 Milwaukee 4, Wis.

W-101

HAND TOOL EMPLOYS EXPLOSIVE POWER

SOURCE of power for new hand tool known as "Tempo-tool" is provided by exploding a cartridge in an enclosed chamber. Function of the tool is to speed and simplify installation operations where it is necessary to attach steel to steel, or steel to concrete, brick or mortar. The explosion drives the pin or stud into steel with such force that the stud is "set" firmly in the steel, in some cases resisting a direct pull of 20,000 lbs, it is claimed. Male or female threaded studs are available. Tool is available in two models: "22" for light fastening operations, and "38" for heavier jobs. *Tempo Products Co., 402 Perry-Payne Bldg., Cleveland, O.*

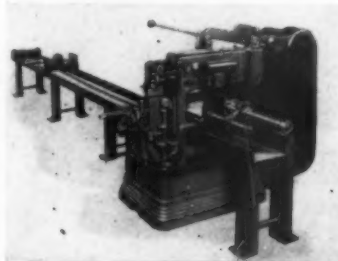


VARIABLE SPEED TRANSMISSION



SMALL size hydraulic variable speed transmission provides infinitely variable speeds from zero or neutral to full electric drive motor speed in either direction, forward or reverse. The transmission is of the multiple piston constant torque type and has a rating up to 1hp maximum and an output torque of 52½ pound inches maximum. It is self-contained and does not require separate oil pump or reservoir. Various types of speed control are available. Dimensions of the transmission are: 9¼" high, 11" overall length, 7" wide, ¾" diameter shafts. *Portman Machine Tool Co., 70 Portman Rd., New Rochelle, N. Y.*

AUTOMATIC POWER SAW



NEW 7" x 7" Peerless automatic power saw, with mechanical pull-up, is equipped with an automatic length gauge for lengths 1/8" to 48". Metal is fed through a four-sided saw frame. The frame surrounds the metal to be cut instead of straddling over the work. Manufacturer states that a unique type of backing plate is provided to back up the blade, to permit maximum pressure on the saw blade without shortening blade life unduly. *Peerless Machine Co., Racine, Wis.*

(Please turn to page 176)



HOW TO "MOTHER" HEAVY COAL LOADS!

Another top performance by a **BWH** product

Working far underground, various room conveyor belts dump coal on this "mother belt", which brings the heavy load up to the cars.

Right-angle feed, tandem drive and huge, out-of-balance loads make the job extra tough. And it's complicated more by constant worry about breakdowns if mildew attacks the belt.

BWH engineers have specified mildew-inhibited Colliery King Belts for all such jobs. Performance has been outstanding.

Treated by a special anti-mildew

process developed by BWH technicians, Colliery King Belts have piled up high tonnage records even under dark, damp conditions usually conducive to the growth of mildew spore.

Another important factor in the long life of Colliery King Belts is the exclusive BWH process of continuous vulcanization. Called ROTOCURE, this method insures belts free from all potential "trouble spots" caused by overlaps in flat press curing. As a result, these rugged belts stand up year after

year, under the most grueling demands.

Conveyor Belts are just one of many quality products manufactured by BWH. When you need industrial rubber goods, look to BWH for dependable ruggedness — to BWH distributors for dependable service.

HAVE YOU A JOB WHERE STAMINA COUNTS?
Bring us your toughest problems . . . we're specialists in solving them. Consult your nearby BWH distributor, or write to us direct.

Another Quality Product of
BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in all principal cities

PLANT: CAMBRIDGE, MASS., U.S.A. • P. O. BOX 1071, BOSTON 3, MASS.

3 Major Improvements



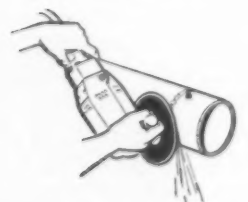
Now... Faster, more productive metalworking with the New **ARMOURCLAD RESIN FIBRE DISC!**



Actual production tests have proved that this new disc *cuts faster*. This greater initial rate of cut lowers production costs, reduces labor costs.



The new **Armourclad Resin Fibre Disc** cuts *faster longer* because its special resin bond gives better grain adhesion—greater resistance to heat and humidity.



Better for all disc operations, the new Armourclad Resin Fibre Disc is *especially good* for severe grinding jobs.



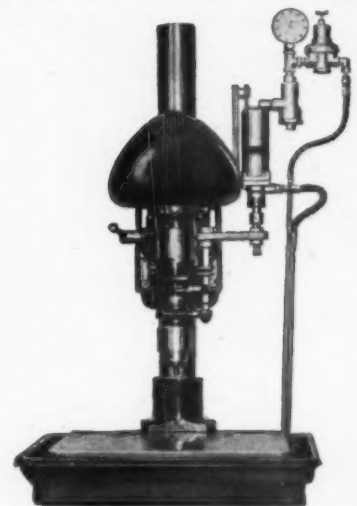
Look for This Label on the Green-Backed Disc

ARMOUR *Sandpaper* WORKS

Division of Armour and Company

1355 West 31st Street • Chicago 9, Illinois

PNEUMATIC DRILL PRESS KIT



PNEUMATIC operating equipment is "pre-engineered" for installation on drill presses used for production drilling. The unit is called Drill Press Kit No. DC-40730. Greater efficiency, increased production and lengthened tool life are claimed for this method of converting to air-powered operation. The kit includes an operating assembly, foot-operated control valve, air strainer, cut-out cock and flexible hose. The engine provides controlled air power which can be adjusted to suit any drill size or stock. Bulletin DC-28 available. *National Pneumatic Co., Rahway, N. J.*

ONE-MAN IMPACTOR

ONE-MAN gasoline-engine powered machine that tamps to maximum density asphalt, concrete, resurfacing materials,



etc., is known as the Wayer impactor. It travels at 32 feet per minute while tamping, and can be operated in gutters and around manholes. The machine provides 2200 1500-lb drives per minute, and uses 3 gallons of gas daily, it is claimed. Model No. 20, for medium-heavy jobs weighs less than 200 lbs. Model No. 26, for heavier requirements, weighs 387 lbs. *Chicago Precision Machine Co., 920 South Michigan Ave., Chicago 5, Ill.*
(Please turn to page 178)

SPRING LOCK NUT

REVOLUTIONARY NEW FASTENER



COSTS LESS THAN NUT

ELIMINATES ONE OPERATION

SURE LOCK FOR BOLT

SPEEDS PRODUCTION

EASILY ASSEMBLED

CUTS TIME . . . MATERIAL . . . COSTS

Available in Two Types—Spring Nut and Spring Lock Nut

PROVED BY TESTS and hard usage on all kinds of products this new, revolutionary fastening device is already saving time, material and money for the nation's progressive manufacturers.

TWO TYPES of this new Diamond G Product, manufactured by the Garrett Company, are available. One replaces the conventional nut and is called the Diamond G Spring Nut. The other is made with spring action tension in it in such a way that it supplies action similar to that of a lock nut—the threads inside of the Diamond G Spring Lock Nut maintain a strong grip on the bolt, or screw and the tighter it is drawn up the greater the locking action.

AVAILABLE IN TWO AND THREE TURNS—depending on the requirements. The two turn type is for use on light assemblies and the three turn

type is recommended when it is necessary to use heavy tightening torques on assembly.

FOR DRIVING OR SETTING—adaptable socket wrenches are now standard items as manufactured by Apex Machine and Tool Company. These new Diamond G Products—Spring Nut and Spring Lock Nut—have all of the advantages of regular nuts and are adaptable for use in hopper feeders. Both types are priced to offer a considerable saving over the conventional type of nut, or fastening device. These products are available in rust resisting metal as well as high carbon steel.

START YOUR PLANT on greater efficiency today . . . write for the complete data sheet on these new Diamond G time and money saving products.

GEORGE K. GARRETT CO., INC.

1421 CHESTNUT ST., PHILADELPHIA 2, PA.

Manufacturers of
DIAMOND G PRODUCTS

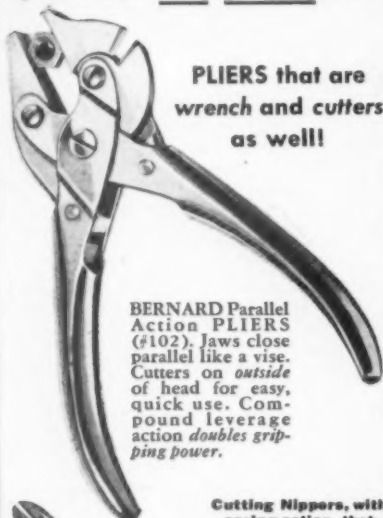


DIAMOND G PRODUCTS

LOCK WASHERS • FLAT WASHERS • STAMPINGS • SPRINGS • HOSE CLAMPS • SNAP AND RETAINER RINGS

HAND OPERATIONS costly?

Then it will pay you to
consider **BERNARD** hand
operation cost savers . . .



PLIERS that are
wrench and cutters
as well!

BERNARD Parallel
Action **PLIERS**
(#102). Jaws close
parallel like a vise.
Cutters on outside
of head for easy,
quick use. Com-
pound leverage
action doubles grip-
ping power.



Cutting Nippers, with
spring action, that
reduce hand fatigue!
BERNARD Diagonal
Cutting Nippers
(#177 — 5½") have
lively spring action
and compound lever-
age to keep hand fa-
tigue at a minimum in
repetitive operations.



Light metal snips that
cut curves in both
directions!

BERNARD Metal
Snips (#888—10¼")
have spring action
and compound lever-
age. Blades are so
bevelled as to permit
easy cutting of curves
in either direction.

Have you studied your hand op-
erations recently with a view to
increased efficiency?

BERNARD hand tools are
saving time and money in thou-
sands of plants—because they do
the job quicker or better or both
—and because *quality and long
life* are built into them.

Faithful Quality Since 1870

BERNARD

Wm. Schollhorn Co., New Haven 9, Conn.

Wm. Schollhorn Co.
6009 Chapel St., New Haven 9, Conn.

Sirs: Please send me your free catalog of
hand tools for industrial use.

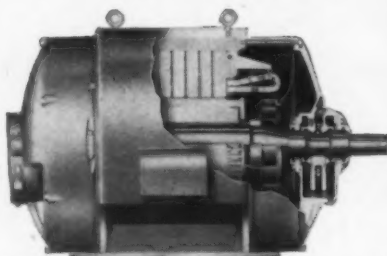
NAME _____

STREET _____

CITY _____ Zone No. _____

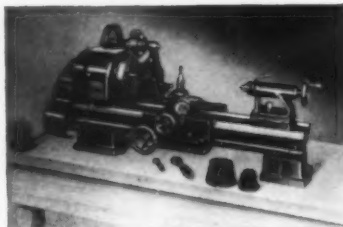
STATE _____

NEW INDUCTION MOTOR



HEAVY-DUTY two-pole (3600 rpm)
squirrel-cage induction motor is shown in
illustration. Construction shown covers
ratings 200 to 700 hp; NEMA Class B
starting (normal torque, low current),
favorable for full-voltage starting. The
motor is suitable for such high-speed
applications as boiler feed pumps, oil pipe,
line pumps, centrifugal pumps, com-
pressors and blowers. It has drip-proof
construction and fabricated steel frame.
Fold-out sheet 4695 with detailed cut-
away drawing of the motor is available.
*Electric Machinery Mfg. Co., Minnea-
polis 13, Minn.*

NINE-INCH LATHE



NEW Logan lathe has a 9" swing and
18" between centers. It is built for
precision manufacturing operations, gen-
eral machine shop and tool room work,
and auto and appliance repair. The lathe
has a ball-bearing spindle mounting
adapted to high-speed operation. The
two V-ways and two flat ways of the
bed are precision ground to within .0005"
of parallelism. It has self-lubricating
bronze bearings. Catalog No. 400 is
available. *Logan Engineering Co., 4901
W. Lawrence Ave., Chicago 30, Ill.*

1 TO 100 KVA TRANSFORMERS



POWER and
lighting trans-
formers in sizes from 1
KVA to 100 KVA,
are being manu-
factured by the
Lindberg Engi-
neering Co. The trans-
formers, rated
from 1 to 15 KVA,
are totally enclosed

for indoor or outdoor use. Transformers
of standard rating are made to operate at
rated frequency, and on any of the rated
voltages up to 600 volts. All trans-
formers include a wiring compartment. This
compartment is manufactured with
knockouts to facilitate any conduit ar-
rangement. The illustration shows a 3
KVA transformer. Literature available.
*Lindberg Engineering Co., 2444 W.
Hubbard St., Chicago 12, Ill.*

(Please turn to page 182)

PRODUCTION FACILITIES AVAILABLE

**LOW OVERHEAD
AND COSTS**

Iowa Manufacturer of elec-
tric generators and farm
equipment desires contin-
uous contract production of
individual pieces, assem-
blies or entire product.
Complete machine, struc-
tural, welding, assembly
and foundry facilities avail-
able. Established 23 years.
Non-union, low overheads,
favorable low cost condi-
tions. B1 Dun rating.

**WINPOWER
MFG. COMPANY**

Dept. B, Newton, Iowa

**FAST
DELIVERY**

ON

**RUBBER GASKETS,
STRIPS, SHEETS**

—2 to 3 days—

...

**RUBBER
EXTRUSIONS**

—3 weeks—

...

**RUBBER
MOULDINGS**

—4 weeks—

Quotations or Samples
Furnished Promptly



**MECHANICAL
RUBBER
PRODUCTS COMPANY**

737 E. 150th Street, New York 55, N. Y.



To Men Who Know Motors

... we could end
our message here!

To men who know motors, a picture like this is worth the proverbial ten thousand words. It speaks with convincing eloquence of craftsmanship to which any motor builder could point with pride.

If you visit Star's modern plant, you'll see scores of examples of the same painstaking craftsmanship that pays off in outstanding performance for Star customers.



Integral HP Motor
for Direct Current

Star not only builds motors well, but also takes leadership in design. Star led in welded steel construction... pioneered ball bearing motors... developed the famed Star Built-in Magnetic Disc Brake for motors... pioneered in the field of gear-motors.

Whether you need special or standard motors, 1/2 to 200 H.P., it will pay to learn why so many critical buyers specify "Star".
Star Electric Motor Co., 200 Bloomfield Avenue, Bloomfield, N. J.



STAR MOTORS

POWER PACKAGED AS YOU NEED IT

SEE THE

*LATEST
DEVELOPMENTS*

BOOTH

505

MACHINE TOOL SHOW
Dodge-Chicago Plant
SEPT. 17-18
BROWN & SHARPE MFG. CO.

SMALL TOOLS

Machinists' Tools
Testing and Gaging
Equipment
Cutters and Hobs
Arbors, Collets and
Adapters
Screw Machine Tools
Permanent Magnet
Chucks
Vises
Pumps
Other Useful Shop
Equipment

BROWN &

IN MACHINES and TOOLS

MACHINE TOOLS

★ MILLING MACHINES

Universal
Plain (including
Manufacturing Type)
Vertical

★ GRINDING MACHINES

Universal
Plain
Surface
Cutter
Tool

★ SCREW MACHINES

Automatic (including
Screw Threading and
Cutting-Off Type)
Wire Feed

NEW DEVELOPMENTS for increased efficiency in manufacturing and toolroom operations will be shown *for the first time* at Booth 505. Come, see new ideas for improving productivity per man and machine. Get "first-hand" answers to your questions. Other well-known, time-tested Brown & Sharpe Machines, Attachments and Small Tools will be displayed also . . . a good opportunity to examine and compare all their features. You are cordially invited. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.

SHARPE





All Good...all the Way

From slots to points, Corbin Screws are good screws. You can use them without having to look them over first. We do that job for you . . . in the laboratory . . . in every step of manufacture . . . and with expert inspection before any lot is packed.

Because we use care *all the way* you can use Corbin Screws all the way. That's why so many screw users specify CORBIN.

ALSO Screw Machine Products milled from bar on single- and multiple-spindle automatics . . . with secondary operations including centerless, cylindrical, thread and internal grinding; roll thread; heat-treating, plating and polishing . . . and rigid inspection all the way.

SS-72

CORBIN SCREW DIVISION

The American Hardware Corporation

NEW BRITAIN • CONNECTICUT

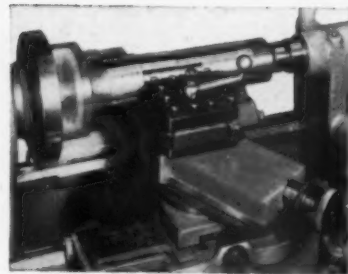
Warehouses:

NEW BRITAIN • NEW YORK • CHICAGO



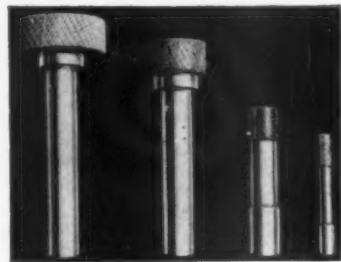
SLOTTED SCREWS
WITH TRUE-CUT SLOTS AND ROLLED THREADS

TOOL POST TURRET



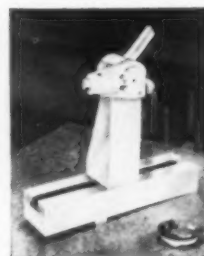
TOOL post turret, known as model L-4½, designed for use with Le Bond dual drive lathes is said to offer extreme rigidity for carbide tipped tools, supporting them by a flat base and clamping them with at least three screws. Maximum tool size for this model is ¾" by 1". Maker states a quick set-up for threading is provided by the 12 stations, 30 degree indexing. Each tool has 3 different working positions and may be used for more than one operation. *Enco Mfg. Co., 4522 Fullerton Ave., Chicago, Ill.*

CARBIDE GRINDING BURS



NEW carbide grinding bur is used for internal grinding, jig grinding, and blending or fine finishing by off-hand grinding. It works with soft material or on steels hardened to 65 Rockwell C. Faster material removal, ability to hold shape and tolerance without dressing or set-up adjustments, no loading, are features claimed by the manufacturer. The burs are stocked in sizes from 1/16" to ¾" tool diameter. Literature available. *M. A. Ford Manufacturing Co., Inc., 780 West First St., Davenport, Iowa.*

NEW WHEEL DRESSER



PRECISION wheel dresser is designed to eliminate time-consuming set-ups for dressing the wheels of internal grinders. It is made for use in repetitive precision production. The dresser does not have to be re-

moved to use the machine. A movement of the locking lever permits the diamond to be turned back out of the way. An Erickson diamond holder incorporates the Erickson precision collet, permitting the diamond to be turned in any position to take advantage of all the cutting points. Literature available. *Erickson Tools Division, 2309 Hamilton Ave., Cleveland 14, O.*

(Please turn to page 184)

When **PROBLEM HEAT**
holds up
your production . . .



these applications

of heat transfer equipment may be the answer

Production speeds up when excess process heat or high temperatures of air or water are controlled.

In a watch factory, for example, General Electric Air Conditioning substantially *reduced rejects* due to dirt and humidity. In precision machining of huge gears, General Electric Refrigeration *prevented dimensional distortion* due to temperature changes.

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equipment has also produced excellent results in anodizing aluminum, electroplating baths, quench bath solutions, tool and gauge rooms, process refrigeration and many other phases of industrial operations.

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Style CW60



ROOM WANTED FOR SPECTACLES?

... There's comfort for wearers of prescription glasses in Willson Cover-Alls.* And the adjustable leather bridge rests lightly on the nose without pressure. Willson-Weld* lenses in the shade you specify, of course.



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GAS WELDERS GO FOR IT... Assured protection of Willson-Weld lenses and comfortable face fit make this goggle day-in, day-out favorite for flame cutting and cleaning as well as welding. Indirect ventilating ports exclude glare.



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... From welding to chipping with a flip of the wrist! Willson-Weld lenses in separate frames flip up to leave eyes protected by clear, Super-Tough* lenses.

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DOUBLE
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ROUGHING ROLL-TURNER TOOL



NEW roughing roll-turner tool is said to speed production and redressing of chilled cast iron rolls of any Schleroscope hardness rating. It comprises a series of replaceable sharp-edged Kennametal cemented carbide discs secured to a heat-treated shank with counter-sunk cap screws, and backed up by a hardened steel plate. The first cut turns a series of circular grooves with rough humps between. The tool is repositioned and a second cut removes humps leaving a "scalloped" surface which is smoothed out with a block type of finishing tool. The tool comes in 4", 6", 8" and 10" widths. Kennametal, Inc., Latrobe, Pa.

CENTERLESS GRINDER WORK REST BLADE



CENTERLESS grinder work rest blade features sectional inserts of tungsten carbide, separated by thin strips of a specially developed alloy and laid in a slot with supporting walls of steel. The blade has reduced work-hour blade-cost as much as 85% in some operations, manufacturer claims. Principle of the blade's construction and operation are: supporting separators and steel walls prevent chipping on jobs where brittleness makes ordinary tungsten carbide blades useless; supporting walls permit use of a tungsten carbide much harder than used before; supported construction makes it possible to lay the tungsten carbide surface four times as deep as on ordinary blades. The Cliff Co., 17 North Leclaire Ave., Chicago 44, Ill.

PORTABLE POLISHER AND SANDER



LIGHTWEIGHT portable electric polisher and sander with a 5" disc is known as the "F-5". It weighs four pounds and is suitable for one-hand operation. It performs all types of sanding, polishing, buffing and other rotary operations. A hand fitting knob is placed for easy grip.

(Please turn to page 186)

When designs call for STEEL of

UNIFORM HARDNESS

HIGH FATIGUE LIFE

FINE SURFACE

ACCURATE SIZE

specify **SANDVIK**



Sandvik Quality Steels have established their reputation the hard way — on applications where physical demands are extra severe.

Cold-rolled Sandvik specialty steels are supplied in annealed, unannealed and hardened and tempered conditions. For twenty-six years they have successfully met the requirements of an increasingly wide variety of exacting special purposes.

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Phone or write for stock lists, quotations or further information.

SS-14



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22,000 SETS OF DIES
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ARMALLOY SOCKET WRENCHES

Arm alloy Socket Wrenches are made of a selected grade Alloy Steel, heat treated, gauged to closest tolerance and beautifully finished in Chrome Plate.

Furnished in five sizes: 1/4", 3/8", 1/2", 3/4" and 1" square drive with a complete assortment of drop-forged ratchets and driving units.

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ARMSTRONG BROS. TOOL CO.

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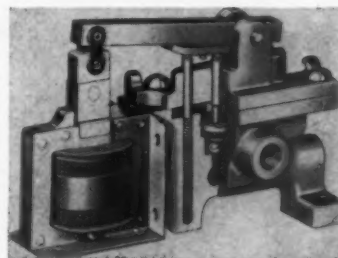
Chicago 12, U. S. A.

Eastern Whse. & Sales Office: 199 Lafayette Street, N. Y. 12, N. Y.
Pacific Coast Whse. & Sales Office: 1275 Mission Street, San Francisco, California

(Continued from page 184)

ping for two hand operation. The spindle turns at 5000 rpm idle speed which gives a normal load speed of 3000 rpm. The motor is 115 volt, a-c, d-c. A 3" disc is also available, together with 3" sand-paper discs and a 5" lamb's wool polishing pad. *Clarke Sanding Machine Co., Muskegon, Mich.*

SOLENOID AIR VALVE



FOUR-WAY air valve for industrial use comprises stainless steel balls traveling between opposed, closely aligned brass seats. It is lever actuated, spring biased, solenoid operated. It may be operated continuously at any practical speed, and is engineered to deliver approximately the full volume of the pressure line with minimum pressure loss, according to the manufacturer. It measures roughly 2" x 6" x 4", and may be installed close to cylinder in inaccessible places. It is recommended for pressures up to 140 psi. The valve is normally supplied with solenoids to operate on 115 volts, 50-60 cycles, with inrush current of 1.85 amperes and holding current of .29 amperes. *Crescent Valve Co., 6073 State St., Huntington Park, Calif.*

MULTIPLE PRESS UNITS

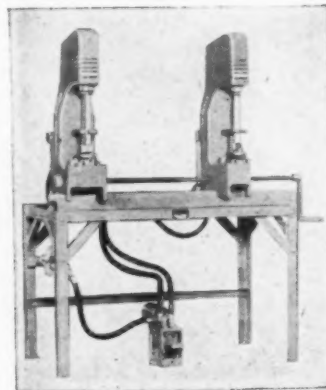


ILLUSTRATION shows setup of two Air-Hydraulic presses. The multiple press units can be adjusted to perform two, three, four or more operations simultaneously under one valve control. Distance between the presses can be adjusted. Each press may be tooled for a different operation, all performed simultaneously. The presses come in two sizes, delivering from delicate pressure up to 2 1/2 or 6 tons pressure. They are available with foot control valve or with solenoid operated single push button control. Accessories available. *Air Hydraulics, Inc., 401 Broadway, New York 13, N. Y.*

(Please turn to page 188)

T & W FORGINGS

**USUALLY COST LESS
AT THE POINT OF
ASSEMBLY**

Quality control, as practiced at T & W, begins with the chemical analysis of steels and involves the control of operations prior to, during, and at the conclusion of the forging production processes. The purpose of T & W quality control is to assure conformity of materials, and completed forgings, to specifications. The reduction of rejections and checking time made possible by T & W quality control procedures will provide you with notable cost advantages. Ask a T & W Forging Engineer about quality control techniques, and the uniformity of physical properties obtainable in T & W forgings that usually cost less at the point of assembly.



A B D C

A—With this modern tensile testing equipment the tensile strength and other physical properties of steels for T & W forgings are accurately and speedily determined.

B—Micro examination of the grain structure of billets, bars and rods usually reveals the presence of elements that might lead to service failure of parts when these results are considered in conjunction with the results of other tests.

C—The chemical laboratory includes apparatus with which to accurately determine the analysis of the elements present in steel.

D—The measurement of the relative toughness of metal and its resistance to impact is obtained by means of an impact test, utilizing this combination Izod-Charpy impact testing machine.

★ ★ ★

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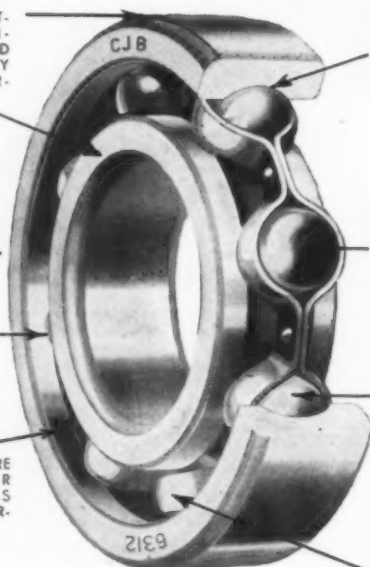
CJB **AHLBERG**
BALL BEARINGS

*Run Smoothly • Quietly
with Long Life*

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SIONS ARE HELD
TO EXTREMELY
CLOSE TOLER-
ANCES.

FACES
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PARALLEL.

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POLISHED FOR
SMOOTHNESS
AND QUIET PER-
FORMANCE.



BALL RACEWAYS
ARE GENERATED
TO TRUE GEO-
METRIC CURVA-
TURES.

BALLS ARE AC-
CURATE IN
SPHERICITY TO
25 MILLIONTHS.

BALLS ARE IN
MATCHED SETS
ACCURATE TO
25 MILLIONTHS.

RETAINERS ARE
STEEL...BRONZE
AVAILABLE FOR
HEAVY DUTY.

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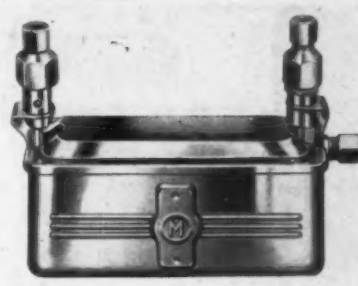
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are precision assemblies of these
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and manufactured for top perform-
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AUTOMATIC HUMIDIFIER



DESIGNED for use where mainte-
nance of humidity is necessary, the sing'e
spray "Atomick" humidifier will atomize
up to 1 1/4 gal. of water per hour, the 4-
spray unit up to 5 gal. per hour. It is air
operated, and a small compressor may be
used where a compressed air line is not
available. It can be applied in conjunc-
tion with steam, hot water or gas fired
unit heaters, or used independently where
direct radiation or warm air furnaces
are installed. It may be controlled by a
humidistat. The humidifier can also be
used for atomizing and dispensing any
liquid that will flow freely through pipes,
it is claimed. *Maid-O'-Mist, Inc., 3218
N. Pulaski Rd., Chicago, Ill.*

SAFETY FLASHLIGHT



RUB-R-LITE "K2" flashlight has all
working parts contained in a sealed-in-
head unit, which is "popped" in or out of
the steel-lined Neoprene case whenever
bulb or batteries are to be changed. It
is approved by Underwriters' Labora-
tories, Inc., for Class 1, Group D,
hazardous locations. The light has a
one-button switch that automatically locks
in each position. There are no exposed
metal parts. Manufacturer claims that
dropping or throwing will not damage it,
and submerging in oil or water cannot
hurt it. It is a non-conductor. *Lennan
Lights, Inc., Burbank, Calif.*

ELECTRODE TIP DRESSER



NEW electrode tip dresser is adapt-
able to portable guns, short stroke sta-
tionary welders and multiple point welders.
It features a floating cutter blade made of
Tan-Tung steel, which floats in the chuck

(Please turn to page 192)

to combat acid corrosion
ALLEGHENY METAL

AL

The corrosive effect of chemicals isn't just a phenomenon of the process industries. There they know how to handle it, and you'll find mountains of Allegheny Metal equipment doing the job. What's more, the chemists are always coming up with something new, and we're matching them with new developments in stainless or high heat-resistant steels. • But almost *every* industry has one or more places where chemicals—or perhaps smoke and fumes—are eating the heart out of metals and costs. Those are problems that Allegheny Metal can solve for you, and frequently at little or no added cost. Let our engineers help you work out the answers *now*, because increased supplies of stainless steel are on the way.

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**THE CROWDS
 GO FOR IT**



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 THAN FOR ANY OTHER SHOE BRAND**

Check the brand of shoes your men wear to and from work every day. It's a safe bet you'll find most of them in Thom McAns. For comfort and for lasting wear, men buy more Thom McAn Shoes than any other brand.

That's why it's easy to get your men into the Safety Shoe habit. All you have to do is make Safety Shoes available to your men in the brand they already know and trust—Thom McAn. Because men wear Thom McAn Safety Shoes willingly, your foot-safety records will hit a new high.

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2. If no Thom McAn Store is near you, or if you have a Plant Safety Shoe Department which you prefer to continue—we'll sell Thom McAn Safety Shoes directly to you at special wholesale prices.

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THOM McAN — THE SHOE EVERYBODY KNOWS — AND ALMOST EVERYBODY WEARS

Fractional Grades

**CUSTOM TAILORED
GRINDING WHEELS**

"Built in" Fractional Grades in any size Bay State grinding wheel provides a wider range for a more precise selection. This exclusive Bay State development produces wheels of three distinct degrees of hardness within the range of one normal grade.

If your present grinding wheels don't quite "fit" (slightly hard or soft), Bay State Fractional Grades is the answer. Try them.

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*Your assurance
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The 27-year record of proved performance by more than 3 million Briggs & Stratton engines is conclusive proof of the value of long experience. Today's Briggs & Stratton 4-cycle air-cooled engines assure all that is best in dependable, trouble-free operation — because more experience is built into them than any other air-cooled gasoline engines.

BRIGGS & STRATTON CORP., MILWAUKEE 1, WIS., U. S. A.

(Continued from page 188)

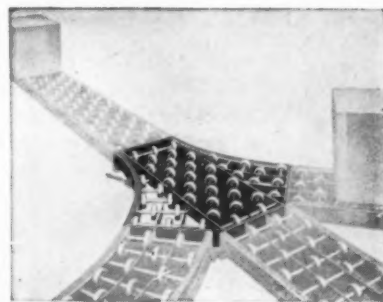
body. Construction of the dresser permits worn electrodes to be dressed without removing them from the welder. The outside diameter of the chuck is ground to .8755-.8765 and can be press fit into most power dressing tools. The chuck is threaded 3/8-24 enabling it to be used on a portable drill, drill press or lathe. A high-speed steel cutter ring is incorporated in the tool for dressing outside diameter of the electrode before it is floated into the tool. C.O. Porter Machinery Co., 666 Front Ave., N.W., Grand Rapids, Mich.

ALUMINUM HAND TRUCK-TRAILER



ALL-aluminum trailer-hand truck weighs 175 lbs and has a nominal capacity rating of 2000 lbs. It is made with a standard load platform 3 ft wide by 6 ft long by 14½ inches high. Platform size is subject to variations for special requirements. The frame is of aluminum alloy and the deck is made of non-skid aluminum plate. Cured-on solid rubber tire type wheels are mounted on Timken bearings and measure 10" by 2½". The platform has aluminum alloy tube stake pockets on both sides and ends and racks of 1" standard pipe, aluminum tubing or steel tubing are available with the unit. Mercury Mfg. Co., 4016 Halsted Ave., Chicago, Ill.

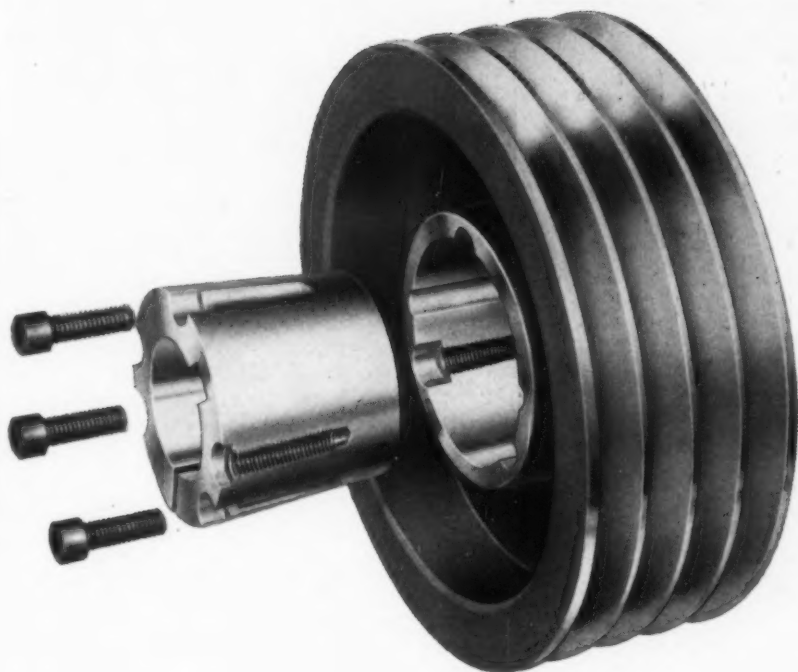
3-WAY CONVEYOR SWITCH



MATERIAL flow in three directions on Roll-or-Wheel conveyors is provided for by a new 3-way switch. "Pivot" wheels in the center portion of the switch are integrated by an arrangement of levers controlled at a single point (remote control lever available), movement of the lever causing a corresponding movement in the wheels, which are then positioned to pick up the part or package from the conveyor and change its direction as desired. No manual guidance is necessary. It is adapted to any conveyor set-up. E. W. Buschman Co., Inc., Cincinnati 23, O.

(Please turn to page 194)

TAPER-LOCK BRAND



THE NEW TIME-SAVING TAPER BORE SHEAVE

TAPER-LOCK has the simplest, surest mechanism ever devised for holding wheels to shafts...TAPER-LOCK saves time. You slip it on the shaft, line it up and tighten while sighting...TAPER-LOCK runs true. It holds with a firmness equivalent to a shrunk-on fit, yet it disengages with less effort than any other sheave.

TAPER-LOCK sheaves are available in all the most wanted sizes. Thus Dodge has not only created a great new product in the power transmission field, but has made this product adaptable to needs throughout industry.

TAPER-LOCK is a striking example of the new Dodge products which help you put more power on the job—cut costs and increase production. The savings which Dodge equipment make possible will be important to you in the competitive days ahead. Get the full story—now.

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MISHAWAKA • INDIANA

IN ALL THESE STOCK SIZES:

CLASS SHEAVE	PITCH DIAMETER	NUMBER GROOVES	TOTAL SIZES
DUAL DUTY "A"	3.0 to 18.0	1 to 6	150
DUAL DUTY "B"	4.6 to 18.4	1 to 6	114
B	5.4 to 38.0 20.0 to 38.0	7 to 10 2 to 10	76 36
C	9.0 to 44.0	3 to 10	128
D	13.0 to 33.0	4 to 10	77

DODGE

of Mishawaka, Ind.

CALL THE TRANSMISSIONEER

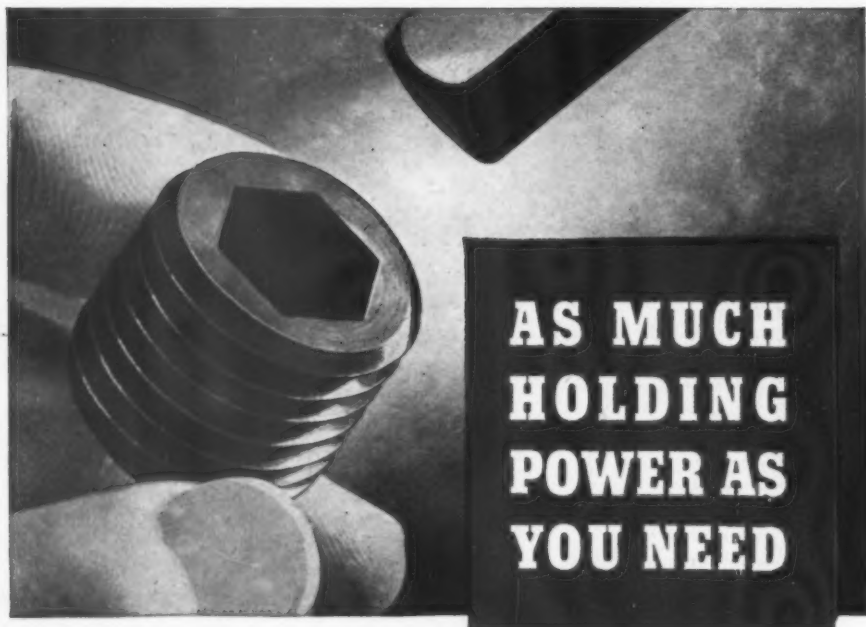
He's a factory-trained specialist qualified to analyze your mechanical power transmission needs and recommend correct equipment. Consult him without obligation. Look for his name under "Power Transmission Equipment" in your classified telephone directory.



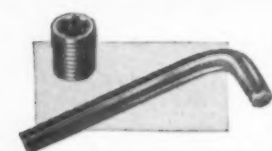
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NAME PLATES

FOR YOUR NAME PLATE REQUIREMENTS, WRITE OUR SUBSIDIARY,
ETCHING COMPANY OF AMERICA, 1520 MONTANA STREET, CHICAGO 14, ILLINOIS



**AS MUCH
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POWER AS
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Whether a "hex" socket screw is right for your fastening, or — because of small size of components, vibration conditions or ease of disassembly — the BRISTOL "Multiple-Spline" is needed, you get *maximum strength* from Bristol's "B-Line".

Both the "Hex" and "Multiple-Spline" socket screws represent careful, correct design by Bristol engineers. In addition, Bristol's system of raw material control keeps quality up to rigid standards. And Bristol's inspection methods,

which include tests for hardness and ultimate strength, gauging for precision of lead and pitch — plus a final visual inspection before packing — result in "Hex" and "Multiple-Spline" screws that feature maximum strength . . . uniformity . . . accuracy.

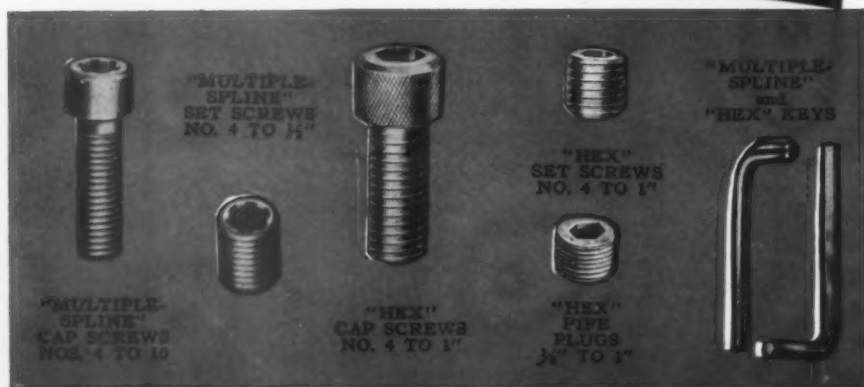
For extra security — at no extra cost — select the right style from the Bristol "B-Line" — made by a manufacturer with 33 years' experience in socket screws. Order from your distributor.

THE BRISTOL COMPANY,
Mill Supply Division, 132 Bristol Road, Waterbury 91, Conn.



**WHY "MULTIPLE-SPLINE" MEANS
TIGHTER**
NO EXPANDING PRESSURE: THE
KEY PULLS THE SCREW AROUND

Only the "B-LINE" has the right
socket screw for every application



DROP-BOTTOM SKID BOX



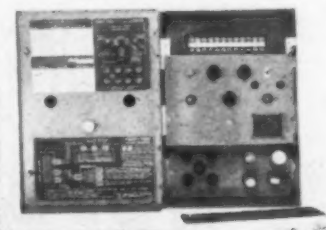
NEW skid box for material handling is emptied by gravity through hinged bottom supported by removable pins. Known as a drop-bottom skid box, it is equipped with skids for floor unloading. Companion equipment is a 41" high stand to hold the box or for use as work table to hold materials. Material handling savings of 20% are claimed. Boxes are made of corrugated hot rolled steel, and may be used with lift trucks. Six sizes with capacities from 1,500 to 4,000 lbs. *Monroe Auto Equipment Co., Monroe, Mich.*

MITRE GEAR BOX



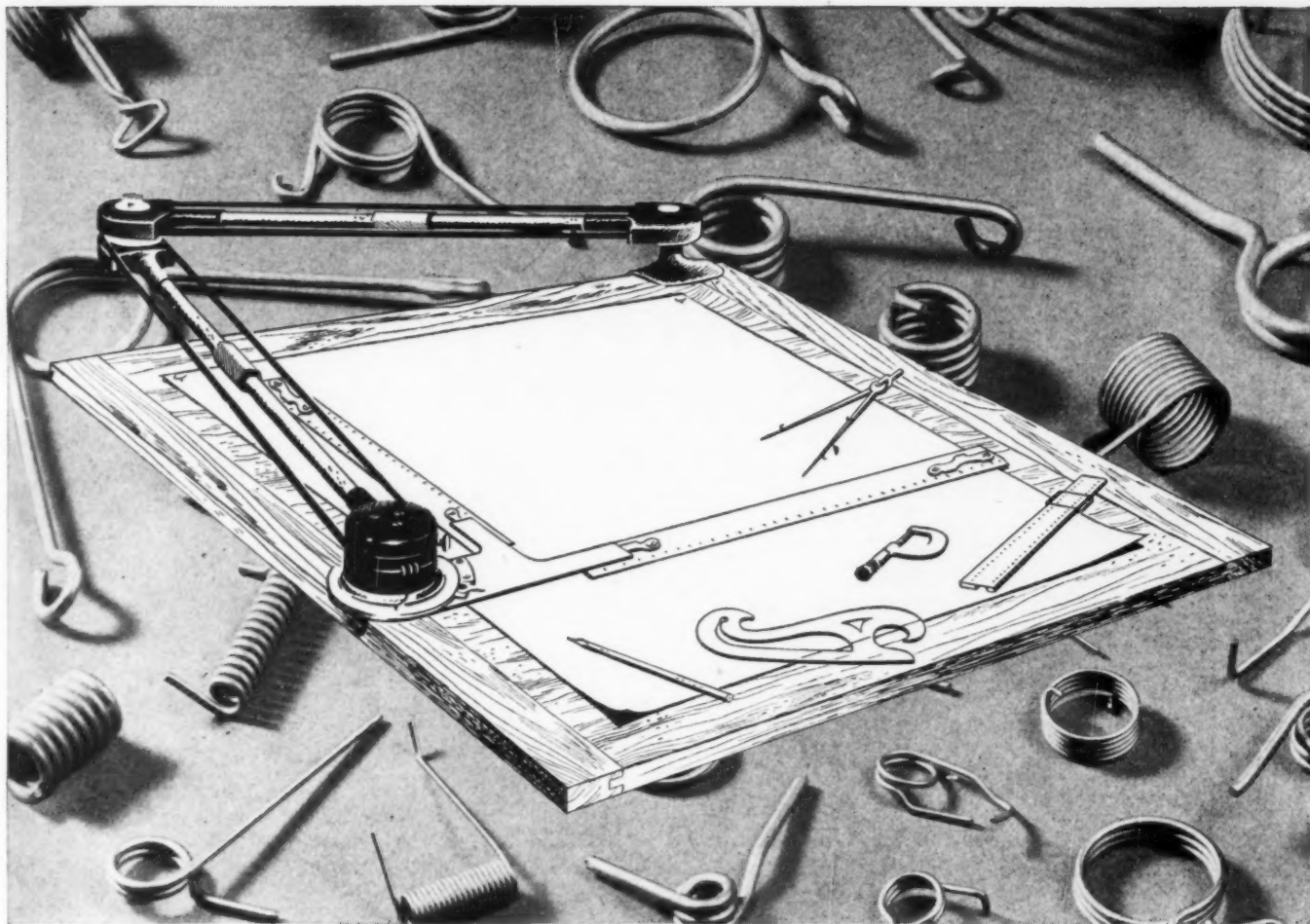
MITRE gear box is made with a solid mounting base and may be installed in any position. Its precision mitre gears assure dependable operation for medium speed power drives or hand operation with 1:1 ratio, it is stated. The steel-cut gears meet power and torque rating for each respective shaft diameter in conformance with AGMA engineering standards. It is furnished with bronze or roller bearings. Six sizes are available with $\frac{1}{2}$ " to $1\frac{3}{4}$ " shaft diameters. Circular available. *Piezo Manufacturing Corp., 110 East 42nd St., New York 17, N. Y.*

ELECTRONIC DEVICE FOR PREVENTING OVERLOAD



"PROTECTRON" is an electronic device for use in conjunction with an electric motor driven machine to "trip" at any pre-set mechanical load increase above normal. When the Protectron trips, a red trip warning light is illu-

(Please turn to page 196)



BLANK PAPER... and an Idea

THE DESIGN of a satisfactory spring involves innumerable factors—load, deflection, size, shape, finish—to mention a few. Having determined these requirements, Wickwire Spencer engineers begin—with brains and blank paper—to establish the proper relationship between these factors and to design a spring that will stand up under the service requirements demanded.

The same exacting care that characterizes the design of springs and wire forms, is equally true as far as manufacturing procedures are concerned. Every coil of wire used in making springs undergoes exhaustive tests before manufacture. Skilled toolmakers set up machines

that make springs conform to exacting specifications. And finally, the springs are tested before shipment.

This beginning-to-end-control has saved time, trouble and expense for scores of manufacturers—has won many loyal customers for us. Our engineers are at your service in designing any conceivable type of wire spring or wire form. Why not write us? Also, we would like to send you our free book, "Springs and Formed Wires." It's free—and full of valuable data relating to spring selection and performance. Address your request to Spring Dept., Wickwire Spencer Steel Division of C. F. & I., 2 New Bond St., Worcester 6, Mass.



WICKWIRE SPENCER SPRINGS

A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION • THE COLORADO FUEL AND IRON CORPORATION

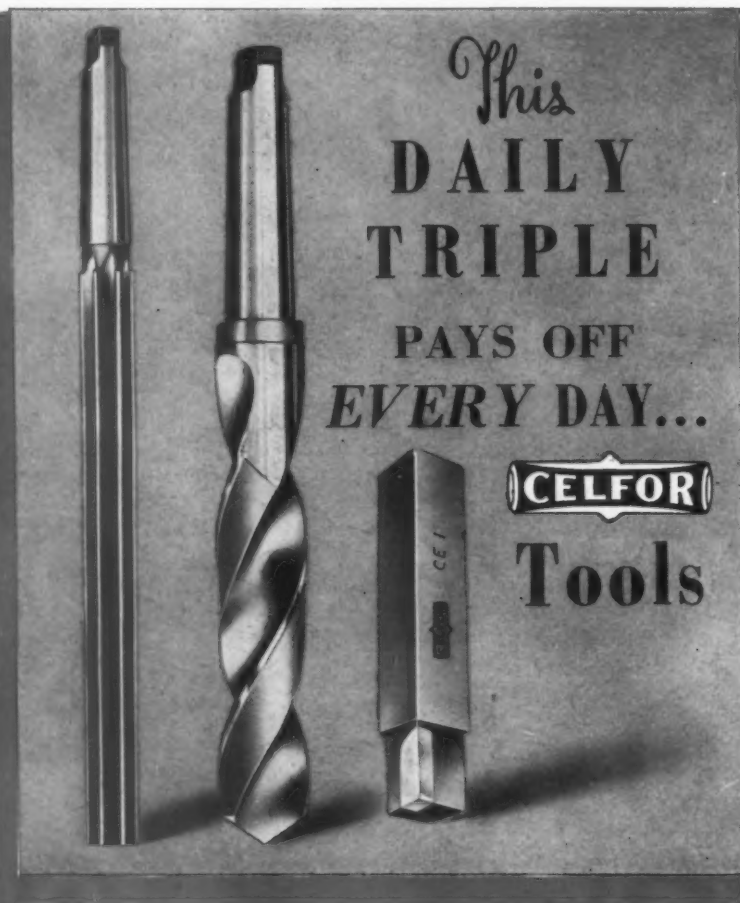
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EXECUTIVE OFFICE—500 Fifth Avenue, New York 18, N. Y.

SALES OFFICES—Boston • Buffalo • Chicago • Denver • New York

PACIFIC COAST—The California Wire Cloth Corp., Oakland 6, Calif.





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PAYS OFF
EVERY DAY...**

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Tools

The outstanding cutting qualities and stamina of Celfor Tools are built into them by Clark's progressive engineering and wealth of "tool savvy," accumulated in nearly half a century of trying to make the best tools. Just how well that goal has been approached is being demonstrated by the tools themselves . . . not on soft set-ups, but on the toughest, meanest jobs, day after day. Cut costs . . . use CELFOR. *The Celfor Line of fine tools is complete for every job:*

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- CELFOR REAMERS
- CELFOR CARBIDE CUTTING INSERTS AND CARBIDE TIPPED REAMERS

Write for the new Celfor Catalog with its invaluable 28-page Engineering Data Section. Use your business letterhead.

CELFOR TOOLS

Division of CLARK EQUIPMENT COMPANY
BUCHANAN, MICHIGAN

OTHER PLANTS - BATTLE CREEK, JACKSON, BERRIEN SPRINGS, MICHIGAN

Products of CLARK • TRANSMISSIONS • ELECTRIC STEEL CASTINGS
AXLES FOR TRUCKS AND BUSES • AXLE HOUSINGS • BLIND RIVETS
INDUSTRIAL TRUCKS AND TRACTORS • HIGH-SPEED DRILLS AND REAMERS
METAL SPOKE WHEELS • GEARS AND FORGINGS • RAILWAY TRUCKS

Prices on CLARK products will not be advanced in excess of increased costs.

(Continued from page 194)

minated, and a relay is energized to initiate any desired control function (using auxiliary equipment). It is used with automatic screw machines, dieing machines, broachers, and various presses. It is used to stop pumps, to signal when shears or drill are dull, and has many applications to specific industries. It is available for 220/440 volt 60-cycle motors in 2 models; for operating current of 1 to 5 amperes and 5 to 10 amperes. *The Brinnell Co., Granby, Conn.*

ADJUSTABLE DOOR UNIT



PREST-O-MATIC industrial door unit is designed for factory buildings where intermittent entrance and exit to and from one building to another is essential. The door unit requires only a 16" clearance over the door opening and an 18" side clearance. It is designed to fold as it opens and unfold as it closes and can be fitted into a wall space with a minimum need for side room. Mechanical remote control operation opens the doors to their full width within 3½ seconds. *Clark Door Co., Inc., 505 Hunterdon St., Newark, N. J.*

ABRASIVE BELT ON GRINDER

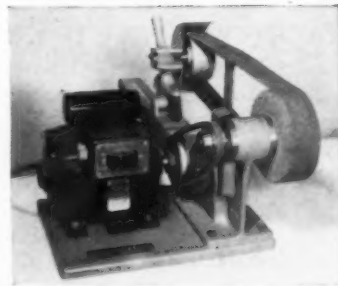
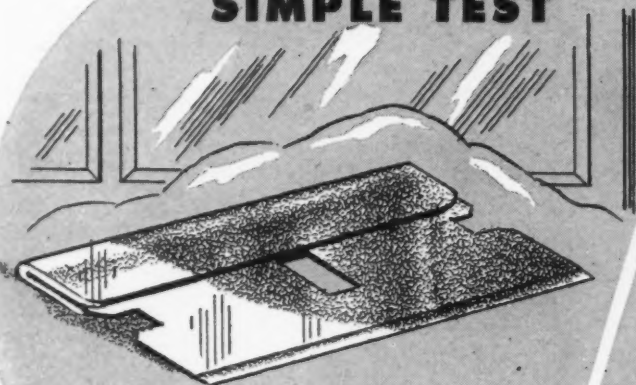


ILLUSTRATION shows application of abrasive belt to the utility grinder, providing the advantages of grinding on an abrasive belt operating over a resilient contact roll or wheel. Wear is on belt and wheel or roll remains flat and maintains its diameter or balance. Grinding on roll quickly reduces the size of stock being ground. This can be squared up on platen. Grinding of inside of a job is done by working over the edge of the platen. For grinding and polishing of certain rounded or oval parts, additional formed resilient contact roll can be attached to the grinder in place of the platen. *Porter Cable Machine Co., Syracuse, N. Y.*

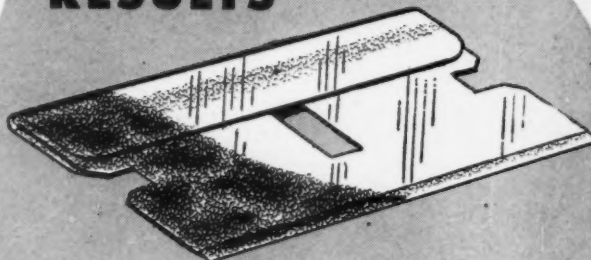
How to PREVENT Corrosion

MAKE THIS SIMPLE TEST



Coat a section of an old razor blade or any piece of raw metal with a protective film of Anti-Corrode. Place it out-of-doors, and leave exposed to the elements.

SEE THE AMAZING RESULTS



Rain, snow, changing temperature, dust and grime have eaten into and oxidized the unprotected metal. But note surface under Anti-Corrode film—bright and unharmed, in its original state.

Cities Service Anti-Corrodes are safe rust and corrosion preventives that bring amazing results. They are reliable safeguards against corrosion of metals in any form or state of finish—whether in storage or in transit. These Anti-Corrodes form a tenacious, durable film that is impervious to moisture and the more common gases prevalent in the atmosphere. And, since they contain lubricating material, they need not be removed in drawing operations. These Anti-Corrodes are made in several types to meet a wide range of service conditions. They are economical, easy to apply and can be removed with kerosene or any petroleum solvent.

(Available only in Cities Service marketing territories EAST of the Rockies.)

Available in one gallon sizes only.

Mail this
Coupon
Today!

CITIES SERVICE OIL COMPANY
Room 206, Sixty Wall Tower, New York 5, N. Y.

Gentlemen: I would like further information on Anti-Corrode and Rust Remover for industrial use FREE OF CHARGE.

NAME

COMPANY

ADDRESS

CITY STATE

This TEAM will save you MONEY and MATERIALS

Recently, we announced the development of Cities Service Rust Remover, and the response to our demonstration offer far exceeded expectations. Rust Remover, of course, *removes* rust; Anti-Corrode is designed to *prevent* rust and corrosion. Together, they will safeguard your equipment and production!



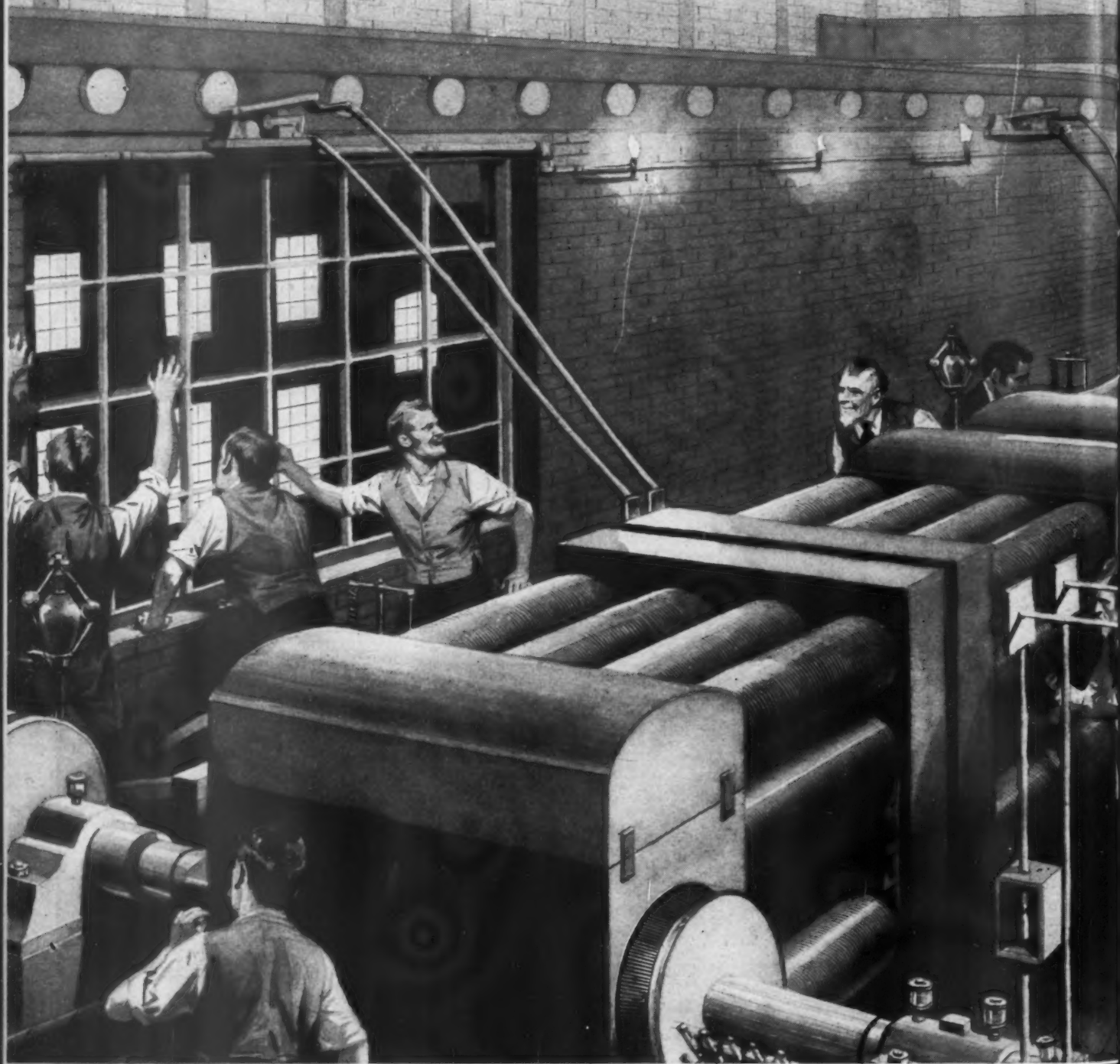
CITIES

SERVICE

Cities Service Oil Co.
NEW YORK • CHICAGO

Arkansas Fuel Oil Co.
SHREVEPORT, LA.

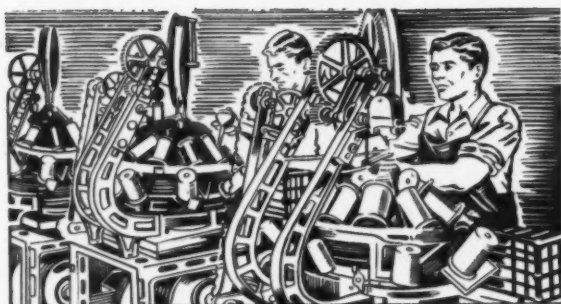
CONFIDENCE...



Manufacturers of Wire Rope and Strand • Fittings • Slings • Screen, Hardware and Industrial Wire Cloth • Aerial Wire Rope Systems
Hard, Annealed or Tempered High and Low Carbon Fine and Specialty Wire, Flat Wire, Cold Rolled Strip and Cold Rolled Spring Steel • Ski Lift



.....how much is it worth?



IN 1880, when electric lights first were tried on New York's Broadway, Roebling's confidence in the future of electricity motivated a new Roebling undertaking... the manufacture of electrical wire and cable.

Roebling's contribution to this great industry during the past sixty-seven years is a matter of record. Its leadership was attained and is being maintained by rigid high standards of quality... tireless development of superior products, better processes, and more efficient methods.

Your confidence in Roebling is valued by every Roebling employee. His income depends upon his ability to preserve that confidence. Every Roebling employee knows that you will continue to prefer the output of his hands only if he produces better products and gives you better service.

Your Confidence in Roebling is Roebling's best salesman.

This applies, not only to electrical wire and cable, but to all Roebling products.

WIRE ROPE . . . ONE OF THE FIRST

WIRE ROPE, the first product manufactured by Roebling, plays an important part in every industry. Its economical use depends upon its proper application, and hundreds of men in your industry have found a cooperative and helpful friend to lend a hand when they were puzzled with wire rope problems. He is their Roebling Field Man.

They find that he really knows wire rope and its applications, yet never hesitates to call on the Roebling Engineers and the Roebling Development and Testing Laboratory.

We, here in Trenton, are constantly being reminded by grateful customers of the ability and integrity of their Roebling Field Man... of his honest and successful efforts to prove that the words "Confidence" and "Roebling" are one and the same.

At the right is a listing through which your nearest Roebling Field Man can be contacted. Why not call or write him today? Make an appointment to meet a friend who can save you both time and money on your wire rope installations.

JOHN A. ROEBLING'S SONS COMPANY

TRENTON 2, NEW JERSEY

Branches and Warehouses in Principal Cities



Atlanta 934 Avon Avenue . . . Raymond 2151
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 Denver 1635 Seventeenth St. . . East 2684 & Keystone 4111
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 Los Angeles 216 S. Alameda St. . . Trinity 1261
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 Philadelphia 12 S. 12th Street . . . Market 7-2751
 Pittsburgh 855 W. North Avenue . . . Fairfax 2766
 Portland, Ore. 1032 N. W. 14th Avenue . . . Broadway 5456
 San Francisco 1740 17th Street . . . Market 8787
 Seattle 900 First Avenue, South . . . Main 4992

Electrical Wire and Cable • Suspension Bridges and Cables
 Aircord, Aircord Terminals and Air Controls • Lawn Mowers

ROEBLING

A CENTURY OF CONFIDENCE





Davey Model 315

...for top air output *plus* economy

**SPECIFY DAVEY
DEPARTMENTAL
Compressors**

**DAVEY DEPARTMENTAL
COMPRESSORS GIVE YOU
THESE ADVANTAGES**

- Power savings
- Lower air losses
- Maximum air operating efficiency
- Make plant expansions easy and economical
- Eliminate shutdowns due to compressor failures
- Air cooling eliminates water bills
- Ease of installation
- Reduced maintenance and replacement expense

Write for Bulletin E-219

IN LINE with today's trend toward employment of small departmental compressors instead of one large centralized machine, Davey offers a complete line of industrial units.

These are available in 60, 105, 160, 210 and 315 c.f.m. capacities. And every Davey has **GUARANTEED LIFETIME VALVES.**

DAVEY COMPRESSOR CO. • KENT, OHIO

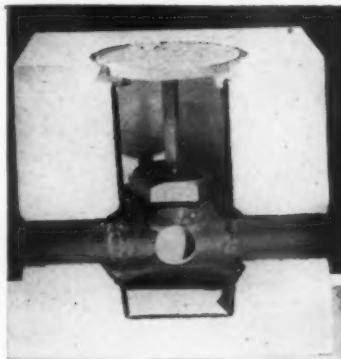
DAVEY

P & P-102

DAVEY COMPRESSOR CO. Dealers in Principal Cities

**BALANCING VALVE FOR
RADIANT HEATING SYSTEMS**

Combination balancing valve and air vent for radiant heating installations has been developed by the Homestead Valve Manufacturing Co., Coraopolis, Pa. The valve is called Radiantrol, and its use is expected to materially reduce installation cost of radiant heating systems as it eliminates need for additional piping, fittings and welding for air vents. The purpose of the valve is to regulate water flow to individual coils in accordance with conditions required in the area. The Radiantrol valve is somewhat similar to a butterfly type control valve. It can be used with pipe coils buried as deep as 8" below the concrete surface as the hollow brass control stem can be cut to appropriate size.



Radiantrol valve. The fiber shipping becomes concrete pouring form.

The stem extends from the valve to a brass floor plate, marked to indicate open or closed position. Venting a system is accomplished by removing the brass floor plate and hollow stem and turning a small cap screw on top of the valve bonnet.

The fiber container in which the valve is shipped, incidentally, is so designed that it may be used as a concrete pouring form. The entire valve is accessible at all times.

1 1 1

**LIGHTER THAN CORK FOAMED
PLASTIC**

The foamed "lighter than cork" plastic developed recently by the Du Pont Company and tentatively called CCA, the initials of its chemical designation, cellular cellulose acetate, has been given the trade-mark "Strux", the company announced recently.

"Strux" is a core material for laminations with metal, wood and plastic skins. In laminations, the material imparts great strength with extremely light weight. It is also a good insulator against heat and noise.

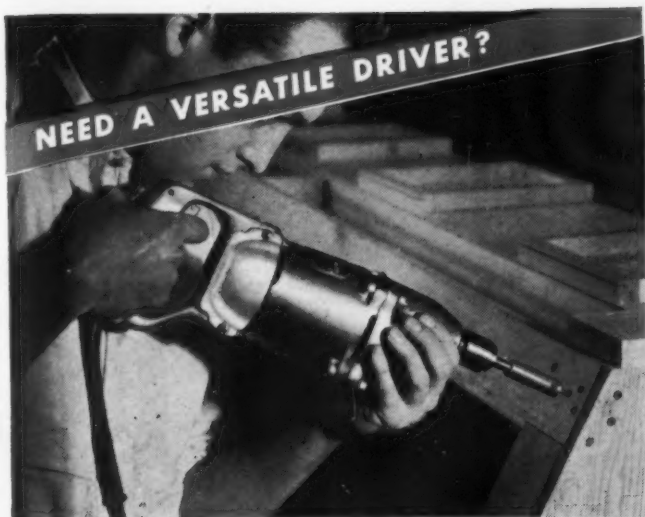
Still being produced on a limited basis, "Strux" has already been successfully adapted in luggage, aircraft wings, panels and stabilizers, food lockers, boats, and refrigerators.

Among the uses forecast for the plastic are in railroad cars, sections of prefabricated houses, elevators, refrigerator trucks and trailers, and rigid insulation.

(Please turn to page 202)

**SAFETEX
GUMMED TAPE**

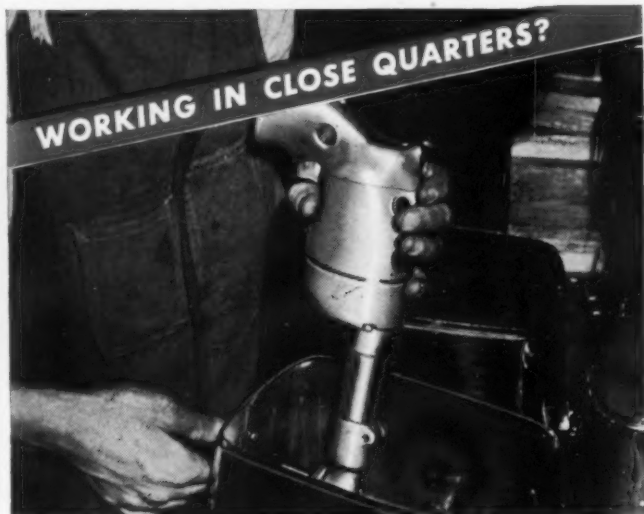
**CENTRAL PAPER COMPANY,
Menasha, Wis.**



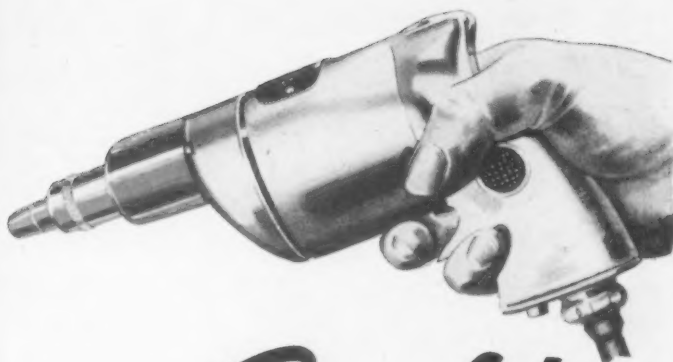
POSITIVE CLUTCH SCREW DRIVERS are tops for versatility. Positive clutch lets free spindle idle until operating pressure engages jaws. This No. 18 Driver is assembling commercial refrigerators on a production basis.



ADJUSTABLE CLUTCH SCREW DRIVERS are designed for uniform production. Adjustable clutch automatically drives every screw to uniform tension, then releases spindle. This No. 10 Scrugun provides exactly correct driving torque for delicate carburetor assembly.



90° ANGLE DRIVE MODELS adapt these tools to work in the most limited clearances. These tools also have Adjustable Clutch. This No. 10 Scrugun is driving metal screws in electric toaster housing.



These *Powerful* Tools Have *All the Answers* for **FAST, CLEAN ASSEMBLY!**

Yes, sir! There are Van Dorn Portable Electric Screw Drivers and Nut Runners for driving self-tapping screws, wood screws, machine screws and nuts and bolts in every type of assembly work. Positive Clutch Models for versatility . . . Adjustable Clutch Models for driving to a uniform, predetermined tension . . . 90° Angle Drive Models for working in close quarters or around corners.

Every one of these cost-cutting Van Dorn Tools is light, compact, easy to handle . . . powered for top-speed performance in turning out accurate, uniform work with minimum operator fatigue. Seven different capacities save you time and money in everything from the most delicate screw driving operations to driving and tightening nuts and bolts up to 1" diameter, or lag screws up to $\frac{3}{4}$ " by 6".

Ask your nearby Van Dorn Distributor for details on these fast-stepping production tools. For your free copies of our 60-page, illustrated "Power Assembly Tool Data Book" and our complete catalog, write to: The Van Dorn Electric Tool Co., 764 Joppa Road, Towson 4, Md.

FOR POWER SPECIFY

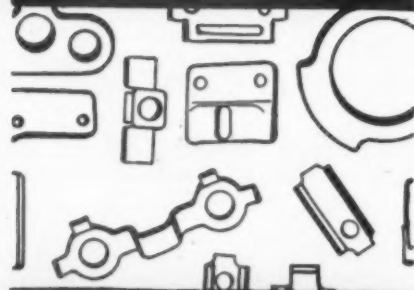
"Van Dorn"
(DIV. OF BLACK & DECKER MFG. CO.)

PORTABLE ELECTRIC TOOLS

Each of these



SMALL STAMPINGS



IS A "MASTER PRODUCT"



Yes — each of our Special Washers is a master product . . . the result of more than a quarter of a century of experience in designing and producing washers of every description.

Let us help you solve your problems on Special Washers and Small Stampings. If one of our 10,000 sets of tools does not satisfy your requirements, our well-trained Tool and Die Department will be glad to work from your blue-prints.

Our long list of satisfied customers is your assurance that we can serve you well.

THE MASTER PRODUCTS COMPANY

6400 PARK AVE. • CLEVELAND 5, OHIO

RECOMMENDED REVISION OF PREFABRICATED HOMES

On recommendation of the Prefabricated Home Manufacturers' Institute and with the endorsement of the standing committee, the U. S. Department of Commerce has issued a Recommended Revision of Prefabricated Homes, Commercial Standard CS125-45, (TS-4385). It has been submitted to producers, distributors and users, for acceptance prior to publication by the National Bureau of Standards.

EXPENDABLE PALLETS

An expendable paper pallet made of corrugated paper in various styles and sizes, which is said to be suitable for use as a one time shipper to be discarded by the ultimate consumer, is announced by the Addison-Semmes Corporation of Racine, Wis.



Packages of glass stem tubing, secured with Load-Lox adhesive, weight approximately 2200 pounds, on expendable pallets with nine 8" corrugated posts.

The pallet is utilized using the Load-Lox system or the metal strapping method of adhering or binding the shipping cartons or containers to the pallet. In the Load-Lox system, cartons are stripped on the bottom with two strips of adhesive and layed up bricklayer fashion in order that they may be properly interleaved and nested. This results in a unit load which is all glued together and in turn glued to the paper pallet.



Fork lift truck handling expendable palletized load of Clark coil spring units; weight approximately 1750 lbs.

The metal strapping system involves the use of thin metal strapping to tie the material onto the pallet. The usual method is to buy one steel strapping completely around the pallet in the short direction and two steel strappings around the pallet in the long direction.

(Please turn to page 204)

NATIONAL PALLET Everywhere!



All NATIONAL pallets are guaranteed for flawless construction. Each pallet made of moisture controlled hardwood at the source of lumber supply—and expertly assembled with hardened-steel drive screws. NATIONAL pallets will last longer under industry's toughest demands.

RUGGED

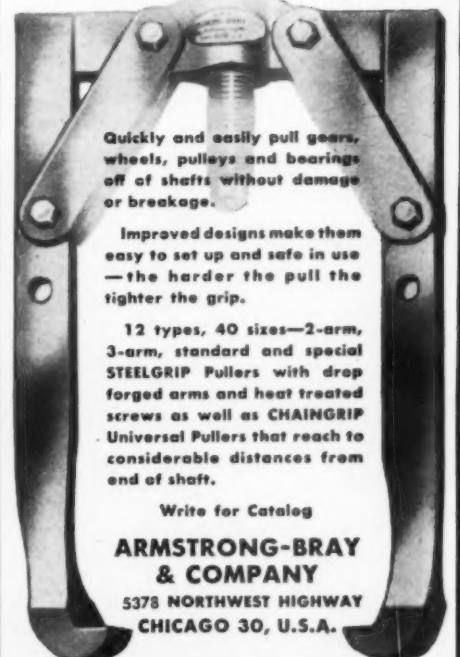
Industry's largest users specify rugged pallets from NATIONAL—the country's largest pallet manufacturer. NATIONAL supplies the engineering and design know-how for any and all types of materials handling programs.

Write or wire for descriptive literature

NATIONAL PALLET CORPORATION

MAIN OFFICES: OLIVER BLDG., PITTSBURGH 22, PA.

ARMSTRONG-BRAY GEAR and WHEEL PULLERS



Quickly and easily pull gears, wheels, pulleys and bearings off of shafts without damage or breakage.

Improved designs make them easy to set up and safe in use — the harder the pull the tighter the grip.

12 types, 40 sizes—2-arm, 3-arm, standard and special STEELGRIP Pullers with drop forged arms and heat treated screws as well as CHAINGRIP Universal Pullers that reach to considerable distances from end of shaft.

Write for Catalog

ARMSTRONG-BRAY & COMPANY

5378 NORTHWEST HIGHWAY
CHICAGO 30, U.S.A.



Can you think
of a pleasanter
way to

**ORDER
STEEL?**



A Voice from Purdy

PLEASANT BECAUSE

the second you're connected with the PURDY plant, you're in for fast steel service. By actual count, the average order takes but 30 seconds to place — and the moment you hang up the phone your order is getting action all along the line. Buying PURDY steel means one call, one order. You get complete steel service with experienced on-the-job advice when you need it. **CALLING PURDY FIRST — SAVES YOU TIME AND MONEY.**

*Calling
PURDY first—
saves you time
and money!*



A. R. Purdy Co.
INCORPORATED

The PURDY line of quality steels includes STAINLESS STEELS, COLD FINISHED STEELS, SPRING STEELS, TUBING, DRILL ROD and COLD ROLLED STRIP STEEL.

ORIENT WAY & PAGE AVENUE, LYNTHURST, N. J. — Tel. Rutherford 2-8100
3757 WILSHIRE BLVD., LOS ANGELES, CALIFORNIA — Tel. Drexel 7347
UPPER NEW YORK TELEPHONE: SYRACUSE 4-1252

The Life of Your Product Hangs by a **THREAD**



The screws, bolts, nuts or other threaded fastenings used in the assemblies of your product are determining factors in the length of its consumer service.

HOLTITE
Engineered Fastenings
REG. U.S. PAT. OFF.

are precision-made of the finest materials to insure speedy application and enduring service. Accurate and rugged they effect production economics by reducing driving time, waste and spoilage. But most important, in the assemblies of your product their precise, uniform thread form and structural strength defy the loosening effects of vibration to assure long, trouble-free service. Specify HOLTITE for your next fastening requirements.



CONTINENTAL
SCREW CO. New Bedford, Mass., U.S.A.

(Continued from page 202)

With the Addison-Semmes expendable paper pallet, after initial gluing or strapping, the pallet is used for storing and for carloading, and car unloading, warehouse storage or distribution.

The maker states that the expendable pallets offer the following advantages: possible use of lighter weight containers; packing more units per carton, or the use of a large container. In some cases, it is said, the shipping container may be eliminated entirely.



Stacked 20 ft. high on expendable pallets, weight approximately 3,000 lbs.

Other savings are enumerated, common with palletizing such as minimum labor cost for materials handling; maximum warehouse capacity according to floor loading; and simplification of the job of taking inventory of warehouse stocks.

1 1 1

SPACE SAVING INSULANT

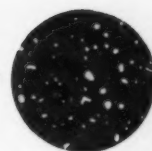
Development of a scientifically unique form of matter into a space-saving insulant, is announced by the Monsanto Chemical Co., Everett, Mass. Used in household refrigerators, it is said to increase refrigerator and freezer capacity up to 60% without adding to outside dimensions.

The insulant (described by chemists as an aerogel and known in the trade as Santocel) is a powdery substance from which all liquid matter has been removed without destroying the microscopically small honeycomb of individual cells comprising the substance. With all liquid removed and only the cell walls remaining, the product becomes 94% "nothing."

The walls of the cells block the motion of molecules which carry heat among each other in a widening chain effect. The average cell space is less than the mean free path in air of the heat-carrying molecule. The cell walls thus act as buffers against heat transfer and make the product, according to Monsanto, the most efficient insulating material known to man.

It is said to be the only product with a thermal conductivity lower than that of still air, heretofore considered the most efficient theoretical insulant. Chemically, Santocel is 6% SiO₂ (silica) and 94% air. Physically, it is a fine, free-flowing white powder, or it may be composed of irregular lumps up to 1/2" in diameter.

(Please turn to page 206)



**Magnifying
a bearing's
trouble spots**



Taking a ball bearing apart *before it's made* is one sure way of getting the jump on service failure due to material weakness. So Federal metallurgists probe the microstructure of unhardened and hardened bearing steel, enlarge cross-sections as much as 2,000 diameters to evaluate their physical fitness, analyze the carbon, chrome and other alloy content and confirm their acceptance to Federal standards.

From the outset, through all of the over 100 individual manufacturing, inspection and cleaning operations that go into a Federal Ball Bearing, the pattern of performance-to-be is thoroughly gaged. *Every fourth operator is an inspector* on the alert for any trouble spot from one manu-

facturing operation to the next...ball to final assembly.

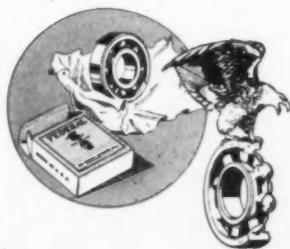
Whether it be tolerances, fit or finish—Federals are precision-engineered for frictionless operation...whatever the service requirement. And they're made in every type and size. Let the Federal representative nearest you tell you more about them. Send for catalog "K."

THE FEDERAL BEARINGS CO., INC. • POUGHKEEPSIE, NEW YORK

Makers of Fine Ball Bearings

REPRESENTATIVES LOCATED AT

Detroit: 2640 Book Tower—26 • Cleveland: 402 Sweetland Building—15
Chicago: 8 S. Michigan Ave.—3 • Los Angeles: 5410 Wilshire Blvd.—36



FEDERAL BALL BEARINGS

ONE OF AMERICA'S LEADING BALL BEARING MANUFACTURERS

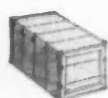


"THE CONTAINER IS PART OF THE PRODUCT"

• Our engineers have had many years of experience in the re-design of shipping containers. Result is that General Engineered Containers are compact, light in weight, and extra strong. They are designed specifically to the product. They're actually "a Part of the Product."

Whatever your packaging need may be, you'll find the current issue of "The General Box" packed with practical information. Why not write for it today?

IMPORTANT NOTICE:
New plants and expanded production facilities are now in full operation. Your inquiry or order will receive prompt attention.



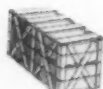
General All-Bound Box



General Nailed Box



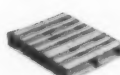
General Corrugated Box



General Wirebound Crate



General Cleated Corrugated Container



Generalift Pallet

ENGINEERED SHIPPING CONTAINERS



25 years' experience in designing better containers for all industry.

General BOX COMPANY

GENERAL OFFICES: 48 W. Illinois St., Chicago 10, Ill.

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon, Natchez.

Continental Box Company, Inc.: Houston, Dallas.

SOLDERLESS CONNECTORS OF ALUMINUM BUILDING WIRE

Some thirty different types of O. Z. solderless connectors designed for wire sizes from No. 12 to 2,000,000 CM, with a special "Cadux" plating which is said to make them suitable for aluminum building wire connections, are announced by the O. Z. Electrical Manufacturing Co., 262 Bond St., Brooklyn 2, N. Y. The Cadux-plated connectors are said to assure positive, permanent connections on aluminum, and according to the maker, the plating eliminates the normal electrolytic action which usually takes place between copper and aluminum.

1 1 1

FREE INSPECTION OF HARDNESS TESTERS SOLD BY WAA

A free inspection service of Clark Hardness Testers sold by the War Assets Administration is announced by Clark Instrument, Inc., 10200 Ford Road, Dearborn, Mich. These machines will be cleaned, tested, and inspected without charge if returned to the factory by the purchaser. Shipping charges, both ways, are to be paid by the owner.



Instruments are cleaned, tested, and inspected.

The company points out that many machines, sold by W. A. A. on an "as is" basis, suffered from neglect on the part of the releasing Government agency. In order that the purchaser might get full use of this equipment, Clark is undertaking this reconditioning service.

Machines returned to the factory are put in good working order at actual cost for materials and labor. An estimate of costs is furnished the owner for his approval before work is performed.

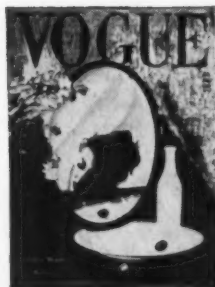
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BOOKLETS AVAILABLE ON BLAST CLEANING EQUIPMENT

A series of informative booklet describing the application of Wheelabrator airless abrasive blast cleaning equipment to gray iron, steel, malleable and non-ferrous foundries and heat-treat and forge shops is available from American Wheelabrator & Equipment Corp., 555 South Byrkit St., Mishawka, Ind.

Each booklet deals with a specific type of industry and includes data on the Wheelabrator and its application to that industry. Case histories of problems solved, illustrations of typical products cleaned, etc., are included.

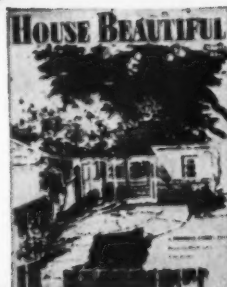
(Please turn to page 210)



New nationally advertised in Vogue to make additional thousands of fashion conscious women want the durable beauty of Pantasote — and insist on Pantasote for distinctive and practical handbags, luggage, rainwear, and shoes!



NEW PANTASOTE CONSUMER TAG printed in rich gold and black . . . supplied without charge to manufacturers to attach to products made of PANTASOTE.



New nationally advertised in House Beautiful to acquaint additional thousands of home makers with Pantasote superb upholstery and wall covering . . . with Pantasote's beautiful colors and grainings . . . with the way it cuts housekeeping!

**2 MORE REASONS WHY
MORE & MORE BUYERS SAY:
"WHEN IT'S PANTASOTE IT SELLS!"
AND
MORE & MORE MANUFACTURERS
ARE SWITCHING TO PANTASOTE!**

FREE

Write today for free sample swatches and complete information. See for yourself the unmatched advantages of Pantasote Pantex, all virgin vinyl unsupported film, and Pantasote Wynsote, virgin vinyl coated fabric. Try it on your own product! Prove to yourself that Pantasote's the finest! Yes! Specify Pantasote! It sells!

THE PANTASOTE CORP. OF NEW JERSEY

444 MADISON AVENUE

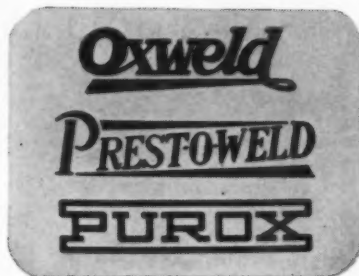
•

NEW YORK 22, N. Y.

Precision Repairs



For Precision Equipment



Oxy-acetylene equipment made by Linde doesn't ask to be "babied" but regular maintenance is the key to trouble-free operation of all mechanical equipment—oxy-acetylene equipment included. It never pays to postpone its care or do a halfway job. Welding and cutting apparatus in need of repair is wasteful of gases and time. It may also create a fire hazard in your shop. If your equipment has been improperly operated or carelessly handled, it may need repairs that cannot be made in your shop without special tools.

Take advantage of Linde repair service and be assured of a factory-quality job—get a complete overhaul, genuine parts, skilled workmanship, and expert inspection and testing at minimum cost. This service is as near as your Linde office or it is available through your jobber, who will gladly forward your apparatus to the nearest of Linde's more than 30 factory-supervised repair stations.

The words "Oxweld," "Prest-O-Weld," and "Purox" are registered trade-marks.

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

30 East 42nd St., New York, N. Y.  Offices in Other Principal Cities.

In Canada: DOMINION OXYGEN COMPANY, LIMITED, Toronto

Gaylord Boxes



Last step in production

— and one of great importance

- Corrugated and Solid Fibre Boxes
- Folding Cartons
- Kraft Grocery Bags and Sacks
- Kraft Paper and Specialties

*Standard of the
Packaging Industry*

As your finished product rolls off the production line it represents all of your skill and knowledge of precision manufacturing.

Gaylord Balanced Design gives you containers of ample, dependable strength to effect delivery in factory-perfect condition.

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DOES YOUR VOICE COMMAND ATTENTION?



Nothing to
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Nothing to
Connect ...
Just Pick up
the Mike and
Talk

AMAZING! PORTABLE P. A. SYSTEM

Meet practically every need with this powerful, fully portable, battery operated Public Address System. Perfect for sales meetings, group instruction, crowd control, and industrial plant use. Excellent sound amplification. Unit weighs only 12 lbs. complete with batteries. Can be used anywhere—walking, standing or riding. The Siltronic Company, Point Bldg., Pgh., Pa.



\$75.10 complete with batteries
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The Siltronic Co.
Point Building, Pgh., Pa., Dept. P
I'm interested in the Siltronic Portable, Battery
operated Public Address System.

- ☐ Send me PA-4's at \$75.10 ea.
\$78.10 ea. west of Rockies (complete
with batteries).
☐ Cash ☐ Check ☐ C. O. D.
☐ Send me descriptive literature.

Name

Address

City

State

FLUX-INJECTION CUTTING STAINLESS STEELS

A 12-page reprint of an article entitled "Flux Injection Cutting of Stainless Steels", by C. E. Bellew, Air Reduction Sales Company steel mill specialist, is available from the Air Reduction Sales Company, 60 E. 42nd New York, N. Y. The article covers the fundamentals, capacities and advantages of the Flux-Injection method. The article is profusely illustrated with 21 photographs and diagrams.

1 1 1

TENSILE STRENGTH COMPUTER OFFERED BY DILLON COMPANY

Illustration shows hand-size Tensile Strength Computer which is available without cost from the W. C. Dillon & Company, Inc., 5410 W. Harrison St., Chicago 44, Ill. The computer is said to eliminate the need for much reference and calculation. Instead of calculating specimen cross-sectional area and then multiplying this area times the PSI to get



Breaking Strength, for example, it is but necessary to set the Computer at specimen size, then Read the breaking strength opposite the PSI. The user can ascertain PSI quickly, or how big to make a specimen, or what load will be needed. Knowing any two factors, the third factor is a ready answer. The computer covers rectangular specimens from 1/32" to 1/4" thick by 1/2" to 1 1/2" wide, from 0 to 150,000 lbs. PSI. The reverse side covers rounds from 1/16" to 1" diameter, up to 100,000 lbs. PSI.

1 1 1

CATALOG OF FILMS FOR FACTORY AND BUSINESS TRAINING

"Slide Films and Motion Pictures—To Help Instructors" is the title of a new catalog of selected visual teaching aids produced and distributed by the School Service Department of the Jam Handy Organization, 2821 East Grand Boulevard, Detroit, Mich. The booklet lists discussion slidefilm kits, sound slidefilms, and educational sound motion pictures for vocational training and classroom use.

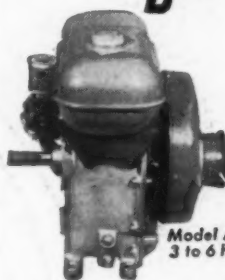
1 1 1

SURFACE ROUGHNESS MEASURE- MENT AND QUALITY CONTROL

A comprehensive story on surface roughness measurement and its relationship to production and quality control is given in a 6-page illustrated bulletin announced by Physicists Research Company, 321 So. Main St., Ann Arbor, Mich.

(Please turn to page 212)

BEE-LINE ENGINES



Model AB
3 to 6 hp.



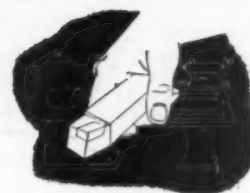
Model BB
2.5 to 4.3 hp.

In Volume Production Prompt Delivery

These 4-cycle, air-cooled gasoline engines are thoroughly service-proved in many applications. Light weight, compact design, and wide power range mean ready adaptability to many types of equipment and powering problems. Backed by 28 years of engine building experience, including manufacture of the famous Kinner aircraft engines.

Gladden Products
CORP.

635 W. Colorado Blvd., Glendale 4, Calif.



KENNAMETAL CEMENTED CARBIDE TOOLS, BLANKS, and SPECIALTIES

- FOR FAST, ACCURATE METAL-CUTTING . . . complete selection of single-point tools and milling cutters.

- RESIDENT TOOL ENGINEERS in 24 cities available for expert help in proper selection and correct use.

- WAREHOUSES in Chicago, Cincinnati, Los Angeles, New York, and San Francisco to expedite delivery.



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SUPERIOR CEMENTED CARBIDES

KENNAMETAL Inc., LATROBE, PA.

Get **SMOOTH SURFACES**
for
Accurate Layout Work



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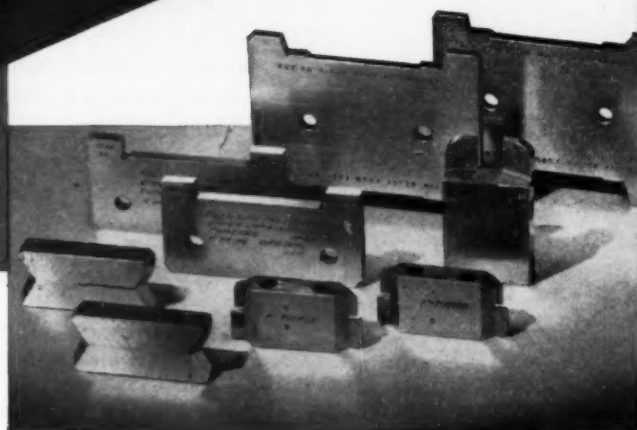
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SAVE TIME AND MONEY with this Flat Stock which is cut to 18" length and accurately ground to standard thicknesses and widths. *No need for the expensive machining required to grind ordinary stock to size.*

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AIR EXPRESS

GETS THERE FIRST



Fastest delivery — at low rates

Trailer parts (51 lbs.) needed in Los Angeles fast. Picked up at Portland, Ore., factory 5 PM on 13th, delivered first thing next AM 821 miles away—in time! Air Express charge \$12.52! Other weights, any distance equally inexpensive and fast!

1927 — 20TH YEAR OF GETTING THERE FIRST! — 1947

(Continued from page 210)

This new bulletin includes suggestions on establishing a surface roughness specification and control system. It also explains how the Profilometer is used (1) to obtain a positive check on roughness specifications in definite microinch units over any desired length of surface; (2) to shorten or eliminate production operations; (3) to detect impending dimensional errors before they occur; (4) to permit more accurate dimensional control; and (5) to obtain a more consistent finish from cutting tools. Numerous photographs show leading manufacturers are using the Profilometer in both inspection and production departments.

1 1 1

THUMB GROOVE SAFETY GRIP USES LEVERAGE PRINCIPLE

Further development of a new thumb groove safety grip on wooden handles of all types has been announced by Nesbit Industries, Inc., Chicago, Ill., manufacturer of component parts. Based on the common leverage principle, the grip, a routed depression on the side of the handle, prevents side swing and increases control of the attached implement.



Wooden handles with new thumb groove safety grip

An added safety feature, the thumb groove provides a non-slip feature that is said to be unique to the handle of instruments of weight or awkwardness. The groove has a wide application on handles of many types, from household articles and office equipment to tools and paint brushes.

1 1 1

ANCHORING PAINT TO ALUMINUM

Alodizing is the name of a process developed by the American Chemical Paint Co., Ambler, Pa., employing Alodine, for corrosion-proofing and anchoring paint to aluminum.

It is essentially a chemical process that does not require electricity for its operation and the company states it can be used for corrosion protection both on painted and unpainted aluminum. The process does not produce an oxide coating, a thin, tough skin positively integrated with the metal being formed by the interaction of aluminum and the Alodine chemicals, according to the company. Outstanding characteristics of this skin are its stability, flexibility and adherence.

The process is said to be a simple one,

(Please turn to page 216)



WE TORTURE OUR CASTINGS

— to learn how to make them
stronger for you

Endless research in Brake Shoe testing laboratories
assures greater tensile strength — higher yield point —
lower coefficient of friction — more wear resistance
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If you wish more information on any of the fasteners shown below, please send for a free copy of the new Lamson & Sessions brochure on **SPECIAL PURPOSE FASTENERS**. Better do it now. It may mean money in your pocket!

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 COMPANY _____ CITY _____ STATE _____
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 1971 WEST 85th STREET • CLEVELAND 2, OHIO



SEMS—Pre-assembled Screw and Lockwasher units



SPECIALTY NUTS, including cone, barrel, plier, oblong, Tri-Slot, half-round



LAMSON LOCK NUTS—One-piece, all-steel—can be re-used repeatedly



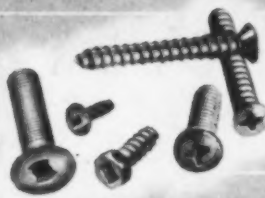
MILLED STUDS in a full range of sizes



DARDELET RIVET-BOLTS with the locking thread . . . time savers for steel construction



WEATHER-TIGHT Bolts—modern fasteners for wood assemblies—eliminate counterboring



PHILLIPS and CLUTCH RECESSED HEAD Machine Screws and Sheet Metal Screws



PLACE BOLTS—for locking assemblies rigidly



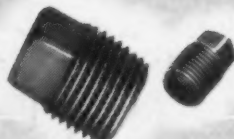
"1003" SET SCREWS of hi-tensile heat-treated steel, square head or headless



"BENT" Bolts, including U Bolts, J, L, Hook and Eye Bolts



WIRE ROPE CLIPS with the new Hi-Center Saddles and extra-strength U Bolts



PIPE PLUGS, square head and headless; forged steel, heat-treated



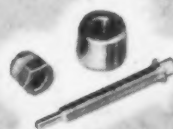
LOK-THRED Studs and Pipe Plugs—Thread locks and seals in standard tapped holes



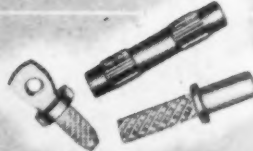
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COTTER PINS of steel, brass, aluminum and stainless steel



BICYCLE PARTS, from axles and saddle bolts to chain-adjusting screws



PLASTIC INSERTS—made to your specifications . . . in production quantities



FURNITURE BOLTS, Skain Nuts, Cabinet Bed Bolts and Bed Screws



AIRCRAFT PRODUCTS: AN Bolts, Nuts, Screws, Studs, Cotters (including Stainless Cotters)

"BOLTS, NUTS & SCREWS"—a compilation of important technical articles on the manufacture, inspection, specification and use of fasteners; order from The Lamson & Sessions Co. at \$1.00 per copy.

"BOLT, NUT & RIVET STANDARDS"—a complete and up-to-date standards book on commercial fasteners. Available only from the American Institute of Bolt, Nut & Rivet Manufacturers, Hanna Bldg., Cleveland, Ohio. \$2.00 per copy.

• CARRIAGE BOLTS • MACHINE BOLTS • LAG SCREWS • WEATHER-TIGHT BOLTS • COTTER PINS • SEMS • KEY BOLTS • CHAIR and LAF • FUR
 LONG NUTS • DARDELET RIVET BOLTS • CLIP BOLTS • PLOW BOLTS • TIRE BOLTS • SHEET METAL SCREWS • MACHINE SCREWS • STOVE EP BOL
 TOR BOLTS • PHILLIPS SCREWS • CAP SCREWS • SET SCREWS • PIPE PLUGS • HOT PRESSED and COLD PUNCHED NUTS • SKEIN NUTS • S
 IN HEAD BOLTS • CLUTCH HEAD SCREWS • TAIL NUTS • HEEL BOLTS • ACORN NUTS • CAPPED NUTS • SLEIGH SHOE BOLTS • STOVE E NE NUT
 PINS • CONNECTING-ROD BOLTS and NUTS • PLACE BOLTS • MARSDEN NUTS • SELF-TAPPING SCREWS • FITTING-UP BOLTS • U BOLTS • PL

A Tough Combination TO BEAT!



★ It takes the right combination of special characteristics to make a top-notch Cap Screw. First it must be *tough*—tough without being brittle. Second it must be *strong*—strong enough to withstand extreme tightening. And third it must be *precision made*—headed, threaded and heat treated to precise specifications.

Lamson and Sessions pioneered the "high tensile" Cap Screw. Many years of bolt making "know how"—of experimentation, research and on-the-job testing stand behind the modern Lamson "1035" product. Beginning with the raw material, Lamson metallurgists carefully control the quality of Lamson "1035" Cap Screws throughout the entire manufacturing process. The newest type of bolt making machinery assures precision accuracy in heading and threading.

Heat treating is done automatically, under carefully regulated atmospheric control, and regular laboratory tests double-check the accuracy of this modern equipment.

As a result of the painstaking care with which they are manufactured, Lamson "1035" high tensile Cap Screws embody the three characteristics of the "ideal" Cap Screw—*toughness, strength and precision*. It's truly "a tough combination to beat"!

THE LAMSON & SESSIONS COMPANY

General Offices: 1971 West 85th Street, Cleveland 2, Ohio
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SPECIAL PURPOSE
Lamson + Sessions
FASTENERS

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STOVE BOLTS • ELEVATOR BOLTS • STOVE RODS • TRACTOR BOLTS •
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NUTS • PLASTIC INSERTS • EYE BOLTS • CLEVIS PINS • HINGE PINS •

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UNCH
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WEATHER-TIGHT
SCREWS • CAP SCREWS • FIN HEAD

AT THE
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Eleven ~~NEW~~ NORTON MACHINES 8 GRINDERS 3 LAPPERS

RECOGNIZED leader in the abrasive industry —
Norton scores again with eleven new grinders
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Three Cylindrical Grinders

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CAM-O-MATIC® Cam Grinder

8 x 24" Surface Grinder

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No. 20 Cutter & Tool Grinder

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SEAL-O-LAP® Lapper

Simplex Surface Finisher

See these latest developments in grinding and
lapping machines in action at the Dodge-Chicago
plant and learn how they can cut costs for you —
on the production line and in the tool room.

NORTON COMPANY, WORCESTER 6, MASS.
(Behr-Manning, Troy, N. Y. is a Norton Division)

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NORTON

ABRASIVES — GRINDING WHEELS — GRINDING AND LAPPING MACHINES
REFRACTORIES — POROUS MEDIUMS — NON-SLIP FLOORS — NORBIDE PRODUCTS
LABELING MACHINES (BEHR-MANNING DIVISION, COATED ABRASIVES AND SHARPENING STONES)

(Continued from page 212)

only two steps being necessary for treating clean, uncoiled aluminum to bring the job to completion if it is to remain unpainted; and sealing is unnecessary as Alodine coats and seals simultaneously.

Depending on production requirements, Alodine can be applied in either a spray or an immersion process, either to parts or continuous strip.

Priming coats are said to be unnecessary for surfaces that are to be painted.

1 1 1

NEOPRENE RUBBERIZED COATING PROTECTS WIRE ROPE CABLES

A new development by Wire and Cable Division, Wind Turbine Company, West Chester, Pa., utilizes a neoprene protective jacket on wire rope products for marine use. The Neoprene jacket of tough but flexible synthetic rubber is about 1/8" thick, forms a close bond with the metal and tightly seals the galvanized wire rope from corrosion or handling damage. Highly resistant to abrasion, the Neoprene jacket has the further advantage of making small diameter ropes large enough for safe, easy handling. The danger of ripped hands, caused by the small wires that often protrude, is eliminated by the permanent "rubberized" covering.

Wire rope with minimum breaking strengths from 200 to 30,000 lbs is available, with the Neoprene jacket, in lengths up to 50 feet. Standard lengths for mooring pennants have a protective thimble at one end and a large loop at the other. End thimbles, swivels, loops, etc., can be supplied as required. Full details available from manufacturer.

1 1 1

TUBELESS AUTO TIRES UNDERGOING TESTS

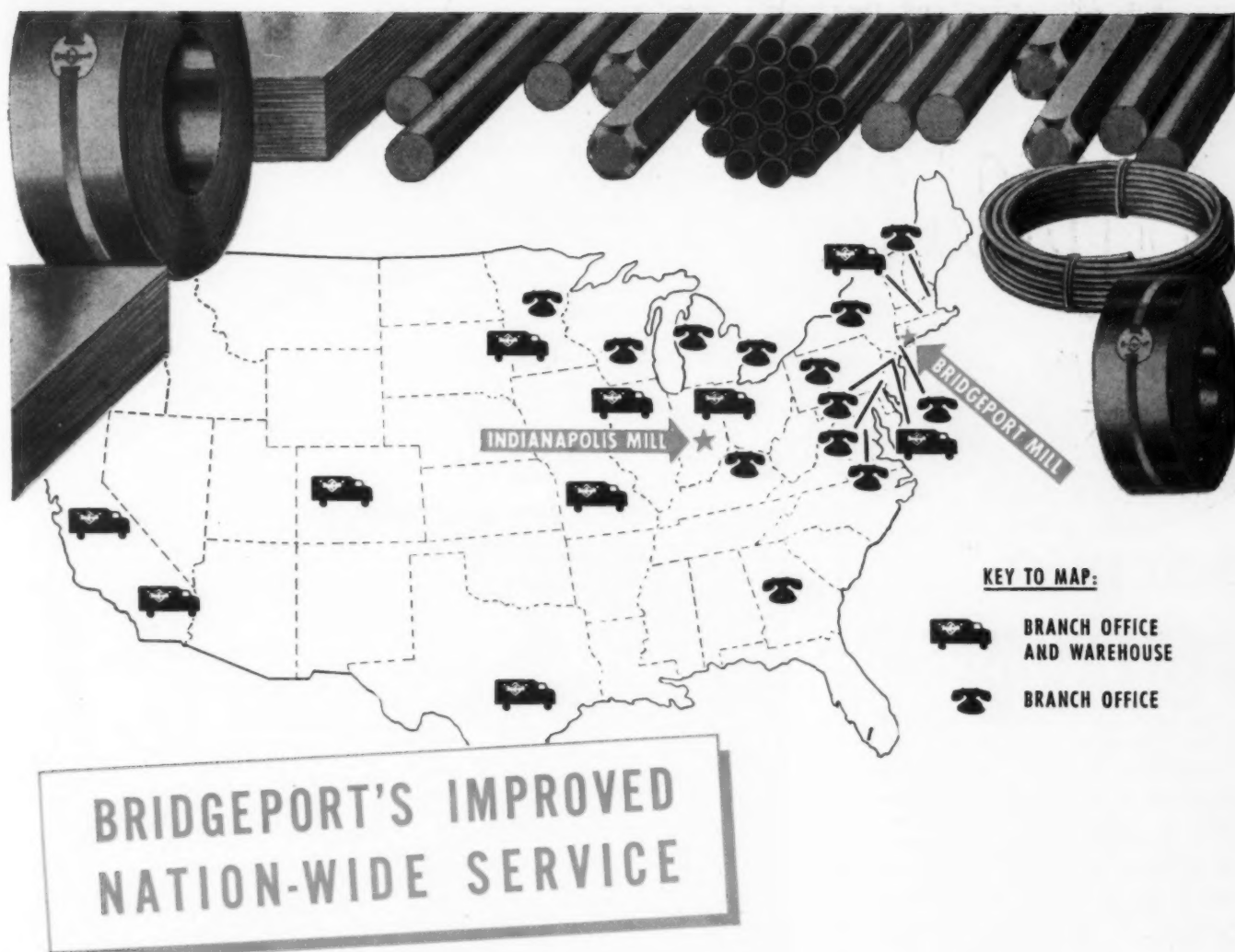
Tubeless tires,—goal of tire manufacturers since the opening of the automotive era,—have been developed by The B. F. Goodrich Company, Akron, Ohio and are now undergoing all known tire tests.

The new tire, perfected after more than three years of engineering, combines the safety features of puncture-sealing inner tubes with improved riding qualities, high bruise resistance, and remarkable ability to retain air pressure according to James J. Newman, vice-president. The tubeless tire embodies rayon cord construction.


In addition to a high speed road testing program in the southwest, tubeless tires are in service on a taxicab fleet in a middle western city, on state police cars and a number of privately-owned passenger cars.


The tubeless tire will be offered only for limited sale at this time, the company stated.

(Please turn to page 218)



KEY TO MAP:

 **BRANCH OFFICE AND WAREHOUSE**

 **BRANCH OFFICE**

BRIDGEPORT'S IMPROVED NATION-WIDE SERVICE

With up-to-the-minute mills at Bridgeport, Conn., and Indianapolis, Ind., Bridgeport Brass offers increased production facilities and quicker deliveries on a nation-wide basis. Specialized skills and technical knowledge on the properties and applications of copper-base alloys are brought to the doorstep of manufacturers of metal goods.

Well-stocked warehouses are located in the most active manufacturing centers. Slitting service is available for greater flexibility in stocks of strip metal in Brass, Bronze, Copper and Nickel Silver. Prompt deliveries of limited quantities of strip, rod, wire, and tubing are made from stock.

To help customers obtain the greatest efficiency from mill products used for fabrication, Bridgeport laboratory and technical service are available. Contact the nearest branch office for service and literature.



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BRIDGEPORT 2, CONN. • Established 1865

Mills at Bridgeport, Connecticut, and Indianapolis, Indiana.
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Warehouse and Jobber Stocks Available for Prompt Delivery

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★ Denver 2, Colorado...1962 Blake Street
Detroit 26, Michigan...2328 Buhl Bldg.
Grand Rapids 2, Mich...510 Assoc. Com. Bldg.

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Indianapolis 4, Indiana...Circle Tower Bldg.
Jacksonville, Florida, 5133 Appleton Avenue
★ Los Angeles 12, California, 130 S. Hewitt St.
Milwaukee 2, Wisconsin, 715 N. Van Buren St.
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Washington 5, D. C., 715 Southern Building

Brass-Bronze-Copper-Duronze

STRIP ROD WIRE TUBING

BRIDGEPORT BRASS

WHAT, NO



NOT IN

LEKTROMESH

Lektromesh . . . the new, one-piece solid metal-plated screen is made by electrodeposition . . . supplements rather than competes with woven wire. Continuous production methods permit runs of 100 foot rolls up to 35 inches in width of 40 to 120 mesh . . . meshes 150 to 400 in smaller units . . . and is furnished in nickel and copper. This unique product presents a smooth surface and is readily fabricated by stamping, welding and soldering. Combining accuracy and uniformity of openings with the smoothness of perforated metals, Lektromesh applications are unlimited. Ideal for strainers in fuel systems, dry-screening and a large number of specialized items. Distinct value lies in its even plane surface that withstands wear when exposed to doctor blades and scrapers as in continuous filters and its unique ability to screen material with minimum clogging.

Lektromesh folder and small sample available. Write Dept. L-208



Portable Power Conveyor System

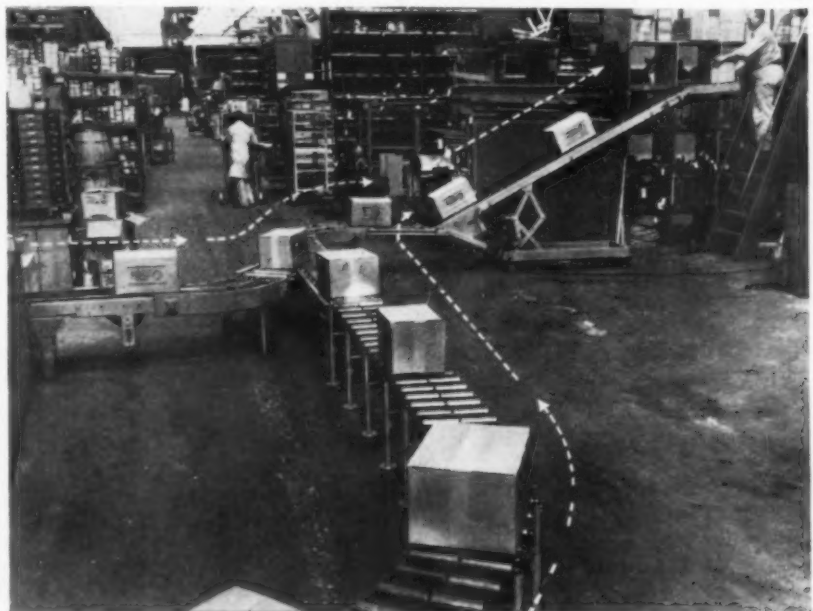
A portable power conveyor system which can be set-up or disassembled quickly to handle loads up to 100 pounds per foot has recently been developed by Food Machinery Corporation, Riverside, California. Termed the "FMC Unitized Portable Power Conveyor System", this completely different material handling equipment combines the flexibility of portable conveyors with the ruggedness and dependable performance of fixed conveyor systems.

The FMC Unitized Portable Power Conveyor System is built around a basic power unit made up of a standard 10 foot straight section powered by a 1/2 H.P. slo-speed motor. This unit combines

with the Accordion gravity conveyor. Accessories include 90 degree power turns, automatic power conveyor intersection, piling conveyor base, power feed attachment, and gravity take-off attachment.

With these accessories and attachments, it is possible to perform a wide range of material handling tasks. For the simple job of loading or unloading a truck, the portable unit is assembled as a stacking or piling conveyor. For more complicated problems, all units can be combined to operate from several different floor levels with all conveyor lines feeding into one main conveyor line.

An eight page book describes the system.



The accordion conveyor in the foreground leads into the basic power unit, automatic intersection, power turn, and piling conveyor.

HIGH ACETYL CELLULOSE ACETATE

Approximately 75% of the cellulose acetate now being sold to the plastics industry by the Hercules Powder Company, is an improved type of cellulose acetate technically called high acetyl. High acetyl cellulose acetate gets its name from the fact that the percentage of combined acetic acid is 56% or higher as compared with approximately 53% in standard pre-war acetate. Tests conducted under A. S. T. M. conditions have shown that the heat and moisture resistance of cellulose acetate plastics articles improve as three percent of combined acetic acid is increased. These properties are also influenced by the type and amount of plasticizer used.

Plastics articles molded from high acetyl acetate are tough without being brittle, odorless, and resistant to many organic solvents, mineral, animal and vegetable oils and gasoline, and possess excellent dimensional stability.

ALUMINUM-COATED MIRROR DEVELOPED BY GLASS COMPANY

An aluminum-coated mirror, with the metal on the front surface of the glass, has been developed by the Libbey-Owens-Ford Glass Co. The glass was designed primarily for use in scientific instruments where a reflection of high perfection is desired.

The mirror, now in production by the Liberty Mirror Division of the company at Brackenridge, Pa., has the advantage of reflecting only a single image while a back-surface reflects a faintly discernible added image from the front surface of the glass, according to an announcement. The glass will be suitable for use in instruments such as telescopes, periscopes and gun sights, and for operating room reflectors and surgical instruments. In addition, it is being used in projection television receivers, sound film projection sets, cameras and film transparency viewers.

(Please turn to page 220)

WeldELLS *have everything**

Only Taylor Forge
"know-how" and
facilities could give
you this combi-
nation of plus-value
features
found only in
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combine these features:

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- Wall thickness never less than specification minimum—assures full strength and long life.
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- The most complete line of Welding Fittings and Forged Steel Flanges in the World—insures complete service and undivided responsibility.

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*Order by Quality



* To get the number of fastenings you need . . . order by quantity. But more important, to get the accuracy and holding power you need . . . order by quality.

All Chicago Screw fastenings are of the highest quality, manufactured from the finest materials and unsurpassed for strength, accuracy and clean, true threads.

The knowledge, facilities and experience acquired during 75 years of manufacturing fine threaded products has resulted in a line of fastenings ideally suited to all modern production methods.

These Fine Products are sold only thru Authorized Distributors

1872



1947

THE CHICAGO SCREW CO.

ESTABLISHED 1872

1026 SO. HOMAN AVENUE

CHICAGO 24, ILL.

NEW WOOD TURNING TOOL SET ANNOUNCED

A new set of quality wood turning chisels has been announced as an addition to the line of hand tools produced by Henry Disston & Sons, Inc., Philadelphia, Pa., manufacturers of saws, cutting tools and high quality steel.

The blades of the eight chisels in the set are made of the highest quality carbon steel used in making Disston tools and are 6 $\frac{3}{4}$ " long. The 10" hard-wood handles were designed for balance and tireless turning. The chisels include a 1" skew, $\frac{1}{2}$ " skew, $\frac{3}{4}$ " gouge, $\frac{1}{2}$ " gouge, $\frac{1}{4}$ " gouge, $\frac{1}{2}$ " spear point, $\frac{1}{2}$ " round nose and $\frac{1}{2}$ " parting tool. The set retails for \$13.75.

1 1 1

ADJUSTABLE WORK STANDS

Originally designed to eliminate scaffolding and special workstands for aircraft maintenance, "Aerostands", hydraulically operated adjustable work stands, are now available for general industrial use according to manufacturer, the Air-equipment Co., Burbank, Calif. Stand



Air equipment adjustable work stand

consists of a 16 sq. ft. work platform, with a maximum static load capacity of 1500 lbs., which is hydraulically elevated or lowered to any working level from 3 to 24 ft. All models equipped with guard rails and skid-proof surfaces on platforms and steps. Scaffolding strips, stand extensions and hoist attachments add to general utility features.

1 1 1

BURNING COAL UNDERGROUND AS POWER SOURCE

Successful burning of coal underground, possibilities of which were revealed in a recent U. S. Bureau of Mines' release (Feb. 18, 1947), is regarded by officials of the Allis-Chalmers Mfg. Co., as an important heat source which may prove a potential aid in solving the country's acute power shortage as well as help accelerate development of future marine, rail and aircraft propulsion equipment. Gas considered suit-

(Please turn to page 222)



HERE'S FACT-FILLED LITERATURE YOU'LL WANT

GET the *real* low-down on Adhesives. Find out why one Adhesive "clicks" perfectly in a *certain* machine at a *certain* speed, bonding *certain* materials! Correct, economical and efficient adhesion is no longer a matter of chance. It is rather a matter of science... careful laboratory study and analysis, by highly trained adhesive chemical engineers. And, when the ONE best formula has been evolved, PAISLEY laboratory control assures perfect uniformity of product and performance for any specific adhesive operation.

For more specific information, send for:

TEAR OUT, PASTE
ON LETTERHEAD
AND MAIL TODAY!

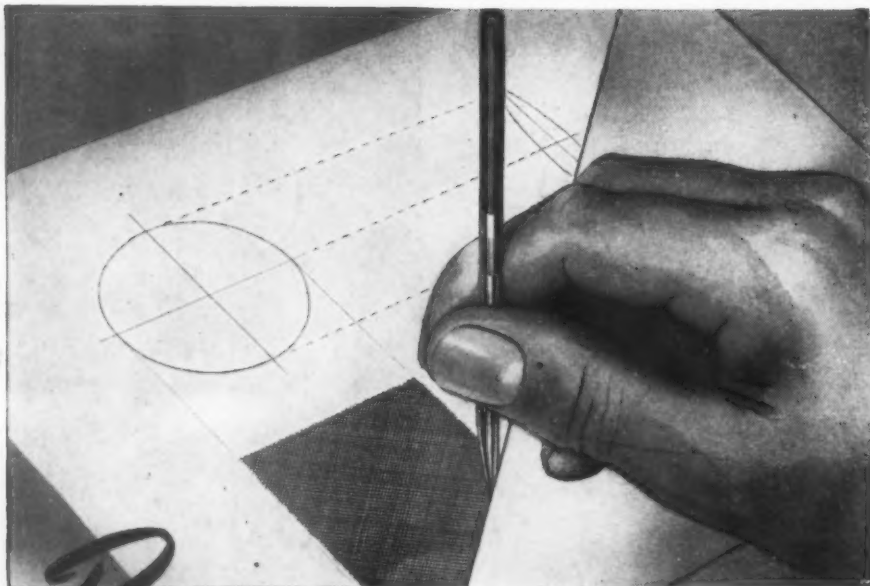
- ☐ 8-PAGE GENERAL ADHESIVE FOLDER
- ☐ GRIP-TIGHT LABEL PASTE BULLETIN
- ☐ CAN LABELING ADHESIVES BULLETIN
- ☐ TUBE ADHESIVES BULLETIN
- ☐ COOLER-PROOF BOTTLE LABEL GLUE BULLETIN
- ☐ ADHESIVE OPERATION DATA SHEET



PAISLEY PRODUCTS INCORPORATED

Manufacturers of Glues, Pastes, Resin Adhesives, Cements, and Related Chemical Products

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Prints . . . AS CLEAN AND SHARP AS YOU CAN DRAW

Special mechanical processing gives Arkwright Tracing Cloths a translucence that produces perfect reproductions. That's why there are no distortions or "ghosts", caused by pinholes, specks or thin spots . . . simply clean, sharp lines.

Arkwright has been preferred for over 25 years, because of its unique ability to produce prints just as crisp and precise as it is possible to draw . . . and do this months and even years after tracings have left the board. Arkwright literally "builds" permanent transparency

into every sheet by a special mechanical process. Arkwright tracings reproduce as if nothing but the lines were going through the printer.

And this cloth never becomes brittle with age. It can take erasure after erasure without wearing through.

Check these things yourself at our expense. Send for free working samples. Test them thoroughly . . . you'll soon see what we mean when we say "lines as clear as if suspended in air". Arkwright Finishing Co., Providence, R. I.

★
*Sold by leading
drawing material
dealers everywhere*
★



Arkwright

TRACING CLOTHS

AMERICA'S STANDARD FOR OVER 25 YEARS

(Continued from page 220)

able for the manufacture of synthetic fuels is now being produced in a burning mine at Jasper, Ala., according to the Bureau of Mines' announcement.

R. C. Allen, manager and chief engineer of the Allis-Chalmers steam turbine department, in commenting upon the joint Bureau of Mines and Alabama Power Co. project, says that the heat available from such underground burning of coal might be utilized in a steam plant, a gas turbine plant, or as fuel for industrial furnaces, depending upon such important determining factors as the location of a given coal deposit in relation to the load center and the relative costs of transportation of the gas and the electric power.

"Where the power load factor is high and the coal body is near an ample supply of cooling water for condensing purposes, the best use of the gas from the process would probably be in a modern high pressure, high temperature steam generating station. The gas would be burned under steam boilers and electricity produced by steam turbine generating units," Mr. Allen pointed out.

"It is probable, too, that gas turbines can be very effectively utilized to generate electric power at the mine from gas derived directly from the subterranean gas producing process. Since gas turbine power plants do not have the water requirements that steam plants do, the former would work to maximum advantage in locations where water is scarce," he said.

According to the Bureau of Mines, the Alabama mine is one of several abandoned or unmined coal deposits having little economical value which will be ignited to provide additional experiments. An average of 35 to 50 percent of the coal is left in the ground in present mining processes, the Bureau reports.

1 1 1

NEW UFORMITE RESIN F-240 FOR COATINGS

Butylated urea formaldehyde type resin having a wide range of compatibility with medium and long-oil alkyds and oleoresinous varnishes, and high mineral thinner tolerance known as Uformite F-240, has been developed by Resinous Products & Chemical Co., Washington Square, Philadelphia, Pa. Exceptional qualities of hardness, chemical and water resistance, and color retention make Uformite F-240 extremely practical in applications such as automotive and metal decorative finishes, including dipping enamels where a variety of medium length alkyds and varnishes are used. It is particularly useful when used with alkyds or oleoresinous vehicles in formulations where relatively low ratios, approximately 10%, of urea resin are required to speed up baking schedules. It can be safely diluted with large quantities of aliphatic hydrocarbons and is completely soluble in aromatic solvents and in esters and ketones.

(Please turn to page 226)

your
manufacturing
costs—
**GOING
DOWN**

Weirzin

*Electrolytic Zinc-Coated
Sheets and Strip*

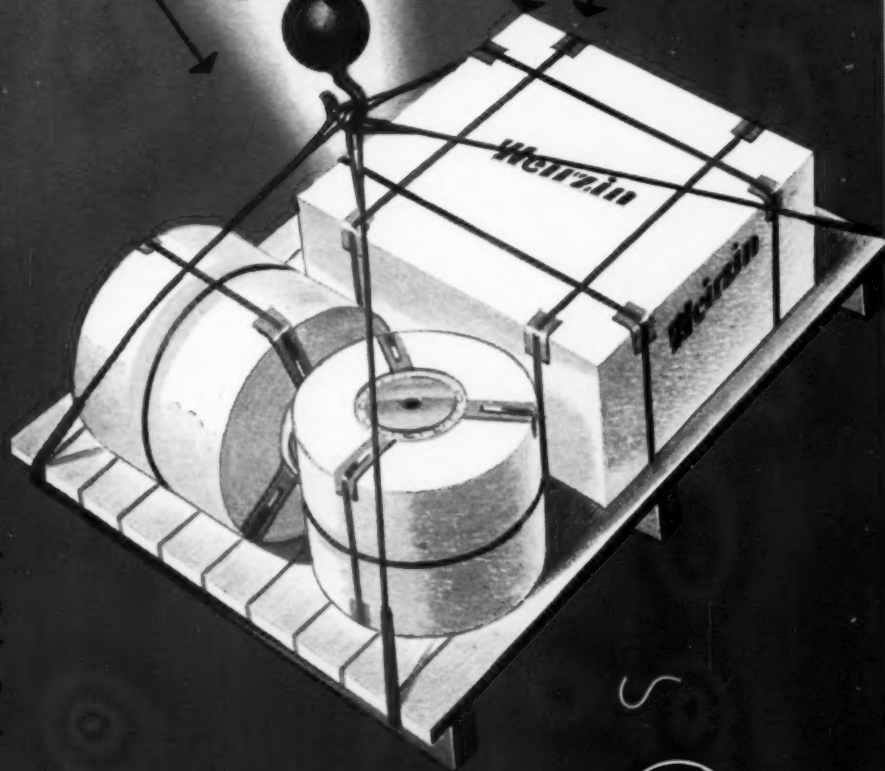
When Weirzin takes the place of ordinary sheets and strip in your plant, you can count on important savings in your manufacturing costs.

Inventory losses are cut—because Weirzin will not corrode in storage.

Many finishing operations are eliminated—because Weirzin requires no pickling, cleaning or buffing before fabrication, no prime coat before painting.

Die maintenance costs are reduced—because Weirzin's tight zinc coating lubricates dies without danger of zinc deposits.

Add to these economies the advantages of a better-finished product, protected for life against underfilm corrosion, and you realize what Weirzin can do for you. Complete information on request.



WEIRTON STEEL CO.

WEIRTON, W. VA. Sales Offices in Principal Cities

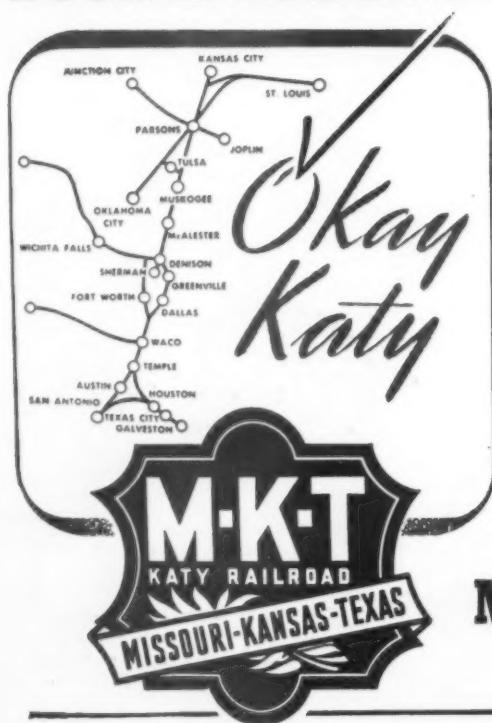
Division of NATIONAL STEEL CORPORATION Executive Office, Pittsburgh



*more Power
to you*



Soon Diesel Power to deliver the goods



THE PACE WILL BE FASTER-THAN-EVER as a battery of giant new Diesels power crack Katy freights to faster schedules and finer service than ever before.

RADIO-CONTROLLED NEW DIESEL SWITCHERS will speed handling at terminal points.

MIRACLES OF MODERN RAILROADING SCIENCE... courteous, trouble-free handling of all your Southwest shipping needs... still more precious hours clipped from your freight-in-transit time... YOURS from the Southwest corridor's main supply line. **OKAY KATY!**

MISSOURI-KANSAS-TEXAS LINES

Serving the Southwest

*a file of
new ideas*

for smoother planning

of roof construction,

replacement,

repair!

Carey

has added cold process built-up roofing for bonded roofs

*i*f roof problems are your worry, file this information under "important": A completely developed line of Cold Process Built-Up Roofings is now available from CAREY.

MORE THAN 50 YEARS of experience in Hot Process Roofing backs up CAREY Cold Process Bonded Roofs. This technical knowledge assures you of fast, economical, *practical* roof construction in areas where Hot Process equipment is unavailable. Application of CAREY Cold Process Roofs can be made on any type deck (bonded when applied by CAREY Approved Roofers). Heating

equipment is unnecessary; fire hazards are non-existent. These CAREY Cold Process Asphalts are suitable for either mopping or spraying application, can be used with either rag or asbestos felts.

Call on CAREY whenever you need help on *any* kind of roofing problem on *any* kind of roof... our long experience is yours for the asking. Right now, of course, you'll want to...



WRITE FOR YOUR FREE COPY

... of this information-packed booklet. It contains 35 detailed speci-

fications for CAREY Built-Up Bonded Roofs. Eight of its 24 pages deal with the new CAREY Cold Process Bonded Roofs. You'll find it handy to have... a helpful reference book. Address your request for a free copy to Dept. P-9.

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Asphalt Shingles & Roofings • Built-up Roofing
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Ground Thread TAPS

will produce **6** times as many threaded holes as a cut thread tap when tapping at high speeds

Your own time study records will prove this statement! Precisely ground and heat-treated HY-PRO high production taps are held to close tolerances. They are tough, accurate and longer wearing . . . require less sharpening . . . maintain their size longer . . . effect stronger fastenings in your assembly.


PROMPT DELIVERY. Many special as well as standard taps in stock.

Send for catalog on company letterhead.

HY-PRO TOOL CO. New Bedford, Mass. USA

Surface • Sphericity • Precision

STROM BALLS



Machines used in final lapping operation on medium and large Strom Balls.

It takes a long series of processes, developed and perfected over a period of years, to make a thing as faultless in material and form as a Strom Metal Ball. Worked to a tolerance of fifty millionths of an inch, their outstanding qualities of finish, sphericity and precision have made Strom Balls the standard of industry. Strom Steel Ball Co., 1850 So. 54th Ave., Cicero 50, Illinois.

Strom BALLS  **Serve Industry**

Largest Independent and Exclusive Metal Ball Manufacturer

LIFT TRUCK HAS REVOLVING DUMP CARRIAGE

A new fork lift truck accessory, the revolving carriage, designed for handling solid, liquid or granular bulk materials which require movement from one container to another, is announced by Towmotor Corporation, 1226 E. 152nd St., Cleveland 10, Ohio.

The unit is said to be especially useful for handling such widely divergent loads as chemicals and scrap metals, and for handling operations where the materials must be raised and dumped, as in charging furnaces in metal working plants.



The carriage revolves in 360° circle in either direction

The carriage revolves in a 360-degree circle in either direction, power being supplied by a hydraulic motor through a chain drive. The operation is controlled by a valve near the operator. A container mounted on the truck forms can be turned 180 degrees to provide complete dumping in approximately five seconds. Printed matter available.

1 1 1

LIGHT WEIGHT TOOL HOSE MADE WITH RAYON

A new light weight hose with rayon strength members and the well-known Homo-Flex construction has been designed by Raybestos-Manhattan, Inc., Manhattan Rubber Division, Passaic, N. J. Designated "Ray-Man", it has been used successfully for bench work with small air operated tools where ordinary air hose is too heavy or cumbersome. It is also said to be useful in industries requiring air for blowing or cleaning in small areas, as in molded products and textile industries, because of its ease of handling and flexibility.

The hose is also available in an oil-proof type, made with oil resisting rubbers. Both types are made in sizes from 1/4" to 1/2".

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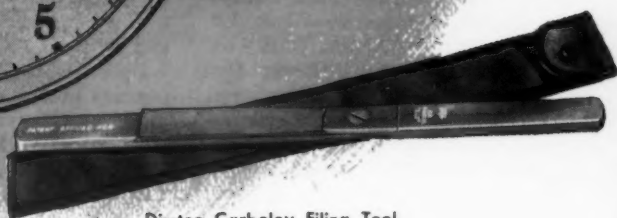
FILM SHOWS DEVELOPMENT OF COPPER-BASE ALLOYS

"Golden Horizons", a 16 mm, 33-minute film in color, on the development of copper-base alloys from pre-historic days, has been made available to industrial plants and technical societies by Ampco Metal, Inc., Milwaukee 4, Wis. The film is furnished without charge, user paying transportation charges one way. The film may be booked by writing direct to the company.

HOW A DISSTONEER

reduced a manufacturer's production operation from

1 HOUR to 5 MINUTES



Disston Carboly Filing Tool
with Fiberoid protection case.

A manufacturer had a lathe operation where the ridges on hardened rolls (used in forming sheets of aluminum) were removed by stoning. It was a tedious job, requiring an hour's time. No one complained about this loss of time as it was thought "there was no better way."

But there was. And a Disstoneer* knew the way. He had solved many similar problems. His "way" called for no other change in the operation than the simple substitution of a Disston Carboly Filing Tool for the stone. Result: a tough one-hour job was cut to an easy 5 minutes... a production speed-up of 12 to 1... and, more than that, a much finer finish was obtained.

The Disston Carboly Filing Tool is a finishing tool for lathe filing of case-hardened steel, brass and bronze. It is single cut on both faces, the entire surface being one continuous piece, thus eliminating objectionable joints. When one side is completely used, the insert may be reversed. New inserts may be installed in the original aluminum holder.



***DISSTONEER**—a man who combines the experience of Disston leadership and sound engineering knowledge, to find the right tool for you—to cut wood, to cut metal and other materials—and TO CUT YOUR COST OF PRODUCTION—not only on special work but on ordinary jobs as well.

Your operations may be different. If they call for metal-cutting band saws you will be interested in...

DISSTON METAL CUTTING BAND SAWS



Disston makes two types of metal-cutting band saws: **HARDENED THROUGHOUT** for high speed cutting of non-ferrous metals, plastics and other materials; also for friction cutting of ferrous metals at speeds of not less than 12,000 f.p.m. Supplied with Regular and reinforced teeth in all standard sizes.



HARD EDGE FLEXIBLE BACK (blades hardened on tooth edge only) for low speed operation and the cutting of ferrous metals. Teeth are milled (not punched) and accurately set by machine. Two types of set: **Raker**, for general metal cutting; and **Group**, for thin wall tubing, mouldings and similar shapes. In joined lengths of any size. Also in 100-foot coils of $\frac{1}{8}$ " to $\frac{1}{2}$ " widths packed in the handy Disston Safety Reel.

HENRY DISSTON & SONS, INC., 933 Tacony, Philadelphia 35, Pa., U.S.A.

Among the ASSOCIATIONS

OREGON ASSOCIATION NAMES COMMITTEES

Committees for the 1947-48 year have been appointed by W. W. McCulloch, president of the Purchasing Agents Association of Oregon. They are as follows:

1948 Convention—Harold Cake, chairman; Ivan Horne, Howard Hutchinson, Les Deal, J. R. McColm, Dick Petteys, Wilson Holden. Attendance—Clyde Lomax, chairman; John Alston, John Cox, Andy Anderson, R. C. Rydberg, Don Weiss, Frank Lemma, Ken VanScyoc, W. V. Jones, William Ferrari. Public relations—Hollis Goodrich, chairman; Carl Reiser, Bert Rue, Virgil Green. Fishing and outings—Fred Nowotny, chairman; No. 1, Lyle McCauley.

Budget, finance, audit — John West, chairman; C. M. Lawrence, P. H. Craven. Program—Hy Barde, chairman; Chet Bamberg, Luke Saunders, Louis Redmond, Al Wheeler. Magazine advisory—Gordon Hanson, chairman; George W. Dickie, M. F. Hobkirk, Art Hawes, R. E. Ponsford. National affairs—Matt Pouttu, chairman; O. K. Buckner, Clare Bay. Bowling—Chet Martin, chairman; No. 1, Fred Hansen, No. 2, Ted Marx.

Membership—Chet Martin, chairman; Elmer Ward, W. S. Bunnell, Ken Schmitz, Earl Holst. Education—Don Tenney, chairman; L. J. Baker, Charles Case, B. E. Hearn, L. Stewart. Constitution and by-laws—Larry Guild, chairman; Charles Case, Paul Garmire. Picnic, golf, special—Bill Hayden, chairman; Joel Titus, Ted Marx, Fred Hanson, E. J. Meyer, Virg. Cowen, Harry Arntzen, Earl Murray, Chet Bourne.

1 1 1

TOLEDO ASSOCIATION OFFICERS FOR 1947-48

New officers of the Purchasing Agents Association of Toledo for the coming year are: W. J. Todd, City Auto Stamping Co., president; Melvin H. Schneider, Owens Brush Co., secretary-treasurer; Burton W. Lang, A. P. Parts Corp., national director.

1 1 1

NEW OFFICERS FOR CANTON ASSOCIATION

Recently elected officers of the Purchasing Agents Association of Canton are: Karl R. Foltz, Berger Division, Republic Steel Corp., president; H. A. Grauman, Timken Roller Bearing Co., vice-president; Kelly Arnold, Hilscher-Clark Electric Co., secretary-treasurer; M. J. Birzer, Jr., Superior Switchboard and Devices Co., national director.

DAYTON ASSOCIATION HOLDS ANNUAL AFFAIR

Over 140 members and guests enjoyed the picnic program of the Dayton Association of Purchasing Agents, held at the Dayton Country Club on June 12. The affair was judged the best held in many years, and the committee was widely commended for its services in making it a crowning event to a year of progress and profit for the membership.

Following golf in the afternoon, a dinner was held in the evening, and retiring president Dimke introduced the new president, Jim Murray, son of a past national director, Allan Murray. President Murray introduced the new officers for the coming year, and the following committee chairmen: Paul Boorum, program; Ed Thum, membership; Jim Graham, publicity; Clarence Bucher and Ted Dimke, education; Red Horstman, ladies program; H. A. Tiemeyer; Lee Brower, convention.

1 1 1

DISTRICT NO. 2 CONFERENCE AT TULSA OCTOBER 2-3

District No. 2 of the N. A. P. A., C. S. Worley, Consolidated Gas Utilities Corporation, Oklahoma City, Okla., vice president, which includes the Dallas, Fort Worth, Houston, Oklahoma City, Tampico, Texas Panhandle, Tulsa, and Wichita associations, will hold its first conference at Tulsa October 2nd and 3rd. Ben Newberry of Dallas, Tex., is general committee chairman, and W. L. James of Oklahoma City is chairman of the program committee. President Garnet T. Dickson of the National Association, purchasing agent for the Goodyear Tire & Rubber Co. of Canada Ltd., New Toronto, Ont., will attend the meeting.

SYRACUSE ASSOCIATION HOLDS ANNUAL CLAMBAKE AND OUTING

The Purchasing Agents Association of Syracuse and Central New York held its annual clambake and outing at Hinerwadel's Grove on Thursday afternoon and evening, July 31. A feature attraction was the softball game between purchasing agents and salesmen.

1 1 1

NEW ORLEANS ASSOCIATION HOLDS ANNUAL PICNIC

The Purchasing Agents Association of New Orleans held its annual picnic at Twin Oaks on August 17. Theo. Harvey, chairman of the entertainment committee; John Peppard, vice-chairman, and Frank Basile, secretary, were assisted by a committee of eight members in making the affair a success.

1 1 1

CINCINNATI GOLF PARTY HELD AUGUST 19

The annual golf party of the Cincinnati Association of Purchasing Agents was held at the Kenwood Country Club on August 19. Ed. Frederick was "officer of the day." In addition to golf, a buffet luncheon, dinner, and a swimming and diving pageant were held.

1 1 1

BUFFALO ASSOCIATION HOLDS FIFTEENTH ANNUAL OUTING

The fifteenth annual picnic of the Purchasing Agents Association was held on August 6 at the Automobile Country Club in Clarence. Howard A. Neubecker was general chairman. A buffet lunch was served from 1:30 to 4:30 p.m., and dinner at 6:30. Dancing followed.

District Conferences

District 2—Tulsa, Okla., October 2-3. Associations: Dallas, Fort Worth, Houston, Oklahoma City, Tampico, Texas Panhandle, Tulsa, Wichita.

District 3—Milwaukee, Wis., October 15-16. Associations: Chicago, Denver, Kansas City, Milwaukee, Rock River Valley, St. Louis, Tri-City, Twin City, Twin Ports.

District 7—Louisville, Ky., October 16, 17. Associations: Alabama, Chattanooga, Florida, Georgia, Louisville, Memphis, New Orleans.

GOULD AND PHILCO

JOIN HANDS TO BRING YOU

**BETTER BATTERIES ...
BETTER SERVICE ...
BETTER DELIVERIES...**

THE Storage Battery Division of Philco Corporation joined forces with the Gould Storage Battery Corporation on June 28, 1947.

Together, we can give you better batteries, faster deliveries, and better service than either of us could alone.

The consolidated organizations will operate under the name of Gould.

Both the Gould plant at Depew, New York, and the former Philco plant at Trenton,

New Jersey, will continue to produce at full capacity, industrial storage batteries of the same high quality as heretofore.

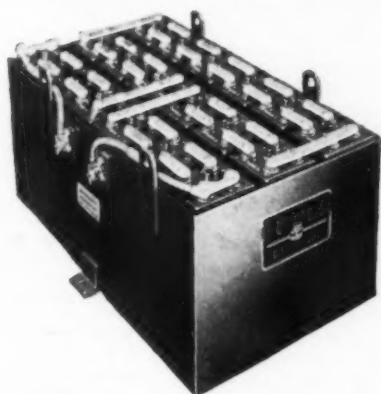
The sales and service organizations of Philco and Gould will be blended together to give you most outstanding service.

The facilities of the new, modern Gould Laboratory at Depew, New York, will bring to both Philco and Gould users all technological advances now in development.

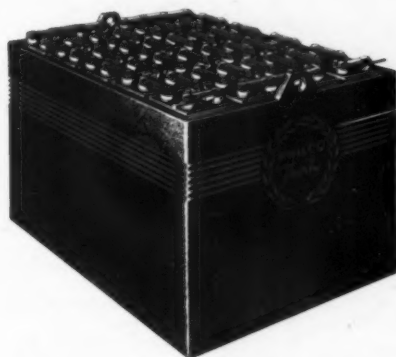
We, the united personnel of Gould and Philco, can offer you better service and faster deliveries — now! We promise you even better batteries for tomorrow.

W. H. Lloyd President

Gould Storage Battery Corporation



● Batteries produced at the Gould plant, Depew, New York, will continue to be designated by the familiar Gould name and trade mark. For example, Gould types KRLD, KHD, KTD and KMD will continue to carry the same identity.



● The name "Philco" on batteries produced at Trenton will gradually be replaced by the name "Gould". For example, Philco "Thirty" types AMH-P, XL-P and XVL-P will be called Gould "Thirty" AMH-P, XL-P and XVL-P.

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Chicago, Ill. • Denver, Colo. • Depew, N.Y. • Detroit, Mich. • East Point, Ga. • Kansas City, Mo. • Los Angeles, Cal. • New York, N.Y. • Philadelphia, Pa. • Pittsburgh, Pa. • St. Louis, Mo. • St. Paul, Minn. • San Francisco, Cal. • Trenton, N.J. • Washington, D. C. • West Salem, Ore. • Kingston, Ont., Canada

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Charles Miller & Son Co.

BIRMINGHAM, ALA.
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Alamo Iron Works

BUFFALO, N. Y.
W. A. Case & Son Mfg. Co.

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GREENSBORO, N. C.
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Jones & Laughlin Supply Co.

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U. S. Supply Co.

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MILWAUKEE, WIS.
Cordee Supply Co.

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Himelblau, Byfield & Co.
Goodin Co.

MOBILE, ALA.
Marine Specialty Co.

MONROE, LA.
W. J. Riley Supply Co.

MONTREAL, QUEBEC
Combustion Engineering Corp.
James Robertson Co., Ltd.

MT. VERNON, ILL.
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MUSKOGEE, OKLA.
Atlas Supply Division of
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Sanitary Corp.
General Mill Supplies, Inc.
Marine Specialty & Mill Supply Co.
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WELDING FITTINGS IMPROVE PIPING DESIGN AND

... SERVE YOU from Coast-to-Coast



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OMAHA, NEB.
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PASSAIC, N. J.
New Jersey Engineering & Supply Co.

PATERSON, N. J.
Paterson Supply & Engineering Co.

PHILADELPHIA, PENN.
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PITTSBURGH, PENN.
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Jones & Laughlin Supply Co.

PITTSFIELD, MASS.
Aird-Don Co.

PLATTSBURG, N. Y.
Aird-Don Co.

PORTLAND, ORE.
Peerless-Pacific Co.

PROVIDENCE, R. I.
Rhode Island Supply & Engineering Co.

READING, PENN.
Reading Foundry & Supply Co.

RICHMOND, VA.
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ROCHESTER, N. Y.
W. A. Case & Sons Mfg. Co.

ST. JOHN, NEW BRUNSWICK
James Robertson Co., Ltd.

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Sanitary Corp.

SALT LAKE CITY, UTAH
Gallagher Co.
Waterworks Equipment Co.

SAN ANGELO, TEXAS
Alamo Iron Works

SAN ANTONIO, TEXAS
Alamo Iron Works
Jones & Laughlin Supply Co.

SAN DIEGO, CALIF.
Mission Pipe & Supply Co.

SAN FRANCISCO, CALIF.
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SOUTH BEND, IND.
South Bend Supply Co.

SYRACUSE, N. Y.
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TAMPA, FLA.
Knight & Wall Co.

TORONTO, ONT.
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TROY, N. Y.
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UTICA, N. Y.
Charles Miller & Son

WICHITA, KAN.
U. S. Supply Co.

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3181

REDUCE PIPING COSTS

LOUISVILLE ASSOCIATION HOLDS TWO SUMMER AFFAIRS

Members of the Purchasing Agents Association of Louisville held their annual boat ride in July on the boat "Skippy K", as guests of the owner, C. Buss Kirchdorfer. Approximately 40 members were aboard as it left the municipal boat harbor at 5:30 p.m. A short business meeting was held at the Club Rubaiyat, on the Indiana shore, where dinner was served. A brief statement was made of preliminary plans for the conference of Purchasing Agents of the Southeast to be held in Louisville October 16 and 17.

The August outing was held at Rockford Gardens, and featured a softball game between a team of purchasing agents led by Elmer Meyer and a team of sales representatives led by Robert L. Schmitt.

EASTERN NEW YORK PLANS PLANT VISIT THIS MONTH

The Purchasing Agents Association of Eastern New York advanced the date of their annual clambake from the third Thursday in September to August 20, in order to take advantage of an invitation to visit the plant of Bigelow-Sanford Carpet Co. on Sept. 18. The invitation was issued by Oakley S. Cooper and F. Albert Hayes of the company.

President Harold H. Frair has planned a meeting for Glens Falls on October 16, and changing the date of the clambake was thought to allow having all "out-of-town" meetings when driving conditions would be most favorable.

MILWAUKEE ASSOCIATION HOLDS SUMMER OUTING

The Milwaukee Association of Purchasing Agents' annual golf party and summer outing was held on Friday, August 22, at the West Bend Country Club. Golf was played in the afternoon and dinner was served in the evening. The entertainment committee included: Bill Brossman, Ivan Luerzmann, Bill Kane, Will Thompson, Francis Bloomquist, and Em Johnson.

WASHINGTON ASSOCIATION HOLDS ANNUAL PICNIC

Industrial, commercial and governmental purchasing agents and their families gathered at Lincoln Park, Seattle, on July 26 for the 26th annual picnic of the Purchasing Agents Association of Washington. R. W. Dickinson, Clough Equipment Co., was chairman of the committee in charge of arrangements.

A softball game opened the afternoon program at 2 p.m., followed by races, games and contests. A picnic dinner climaxed the day at 6 p.m.

Assisting committeemen on arrangements included: Sam Fis, American Smelting & Refining Co.; Walter J. Fry, Imperial Candy Co.; F. K. Gilman,

Mannings Inc.; Don Langlois, Northwest Steel Rolling Mills; Felix McLarney, Crown Zellerbach Corp.; George Nethercut, Monsanto Chemical Co.; C. W. Reynolds, Chicago, Milwaukee, St. Paul & Pacific Railroad; M. C. Staley, A. M. Castle & Co.; Harold Wanser, National Steel Construction Co., and J. L. Young, Signal Oil Co.

CHATTANOOGA ASSOCIATION CHOOSES NEW OFFICERS

New officers of the Chattanooga Purchasing Agents Association for the coming year are: Lee Benson, president; C. H. Burke, secretary; Henry L. White, treasurer, and W. S. Flinn, national director.

BOARD MEMBERS CHICAGO WOMEN'S DIVISION GIVEN ASSIGNMENTS

Members of the Board of the Women's Division of the Purchasing Agents Association of Chicago, have been given the following special assignments by President Mabel Waller:

Florence M. Hayes, Chicago Tool & Engineering Co., chairman of Attendance and Tours;

Rhode M. Stewart, Marbon Corporation, Program chairman;

Grace E. Bell, Standard Varnish Works, Membership Co-chairman;

Alice Rowbotham, Verson Allsteel Press Co., Membership Co-chairman;

Edna Swihart, General American Transportation Co., Associate membership chairman;

Dorothy Thomson Starr, The Regensteiner Corp., chairman of Social Committee and Sickness Committee;

Mary A. Clancy, National Broadcasting Co., Inc. chairman Grievance Committee;

Annette O. Schmidt, American Color-type Co., chairman of Membership Committee;

Lenora M. Whitman, Armour Research Foundation, publicity chairman.

BROWNING TO ADDRESS CHICAGO ASSOCIATION

Albert J. Browning, vice president in charge of Purchases, Ford Motor Company, Dearborn, Mich., will be guest speaker at the September 11th meeting of the Purchasing Agents Association of Chicago. The meeting will be the association's Executive Night meeting, and will be held in the Grand Ballroom of the Hotel Sherman. A large attendance is expected, as members have been asked to extend an invitation to company executive officers, and also purchasing agents assistants and buyers are invited. Mr. Browning's topic is—"Today's Purchasing Policies and Trends."

ALABAMA ASSOCIATION HOLDS ANNUAL PICNIC

The Purchasing Agents Association of Alabama held its annual barbecue and picnic at the Roebuck Club, Birmingham, Ala., on August 8th.

BALTIMORE ASSOCIATION TO HOLD 7TH ANNUAL PRODUCTS EXHIBIT

The seventh annual Manufacturers' Products Exhibit, sponsored by the Purchasing Agents Association of Baltimore, will be held in that city in the Lord Baltimore Hotel on Tuesday, Wednesday and Thursday, November 4, 5 and 6. The exhibit committee, headed by J. H. Gaston, City Purchasing Agent, is composed of: John J. Schwarz, Maryland Trust Co., vice chairman; S. J. Buschman, Stark Electric Co., vice-chairman; Wm. Franz, J. S. Young Co., booth reservations; Morton S. Busick, Lord Baltimore Hotel, C. C. Copenhaver, Eastern Stainless Steel Co., and Anthony J. Peroutka, Federal Reserve Bank, traffic; W. A. Johnson, The Balmar Corporation, and L. I. Whiteford, Maryland Glass Corp., attendance; A. H. Schultz, Jr., Revere Copper and Brass Co., and Jno. H. Crowther, H. E. Crook Co., exhibitors' breakfast.

DISTRICT NO. 3 HOLDS FIRST CONFERENCE IN MILWAUKEE

The first conference of District 3, National Association of Purchasing Agents, is scheduled to be held in Milwaukee, Wis., on October 15 and 16. The Purchasing Agents Association of Milwaukee is sponsoring the affair. Final details on program and arrangements will be published in the October issue of Purchasing Magazine.

The following associations make up District 3: Chicago, Denver, Kansas City, Milwaukee, Rock River Valley, St. Louis, Tri-City, (Davenport, Rock Island and Moline), Twin City (Minneapolis and St. Paul), and Twin Ports, (Duluth and Superior, Minn.)

CENTRAL N. Y. ASSOCIATION TO VISIT ALCOA MASSENA PLANT

The September meeting of the Purchasing Agents Associations of Syracuse and Central New York, will hold its September meeting at the Aluminum Company of America, Massena, September 24th. The meeting will consist of plant visitation, golf, and regular dinner meeting. G. L. McCaffrey, Auto-Lite Battery Corp., Owen-Dyneto Division, Syracuse, N. Y., is secretary of the association.

ASTE TO HOLD ANNUAL EXHIBIT IN CLEVELAND IN MARCH

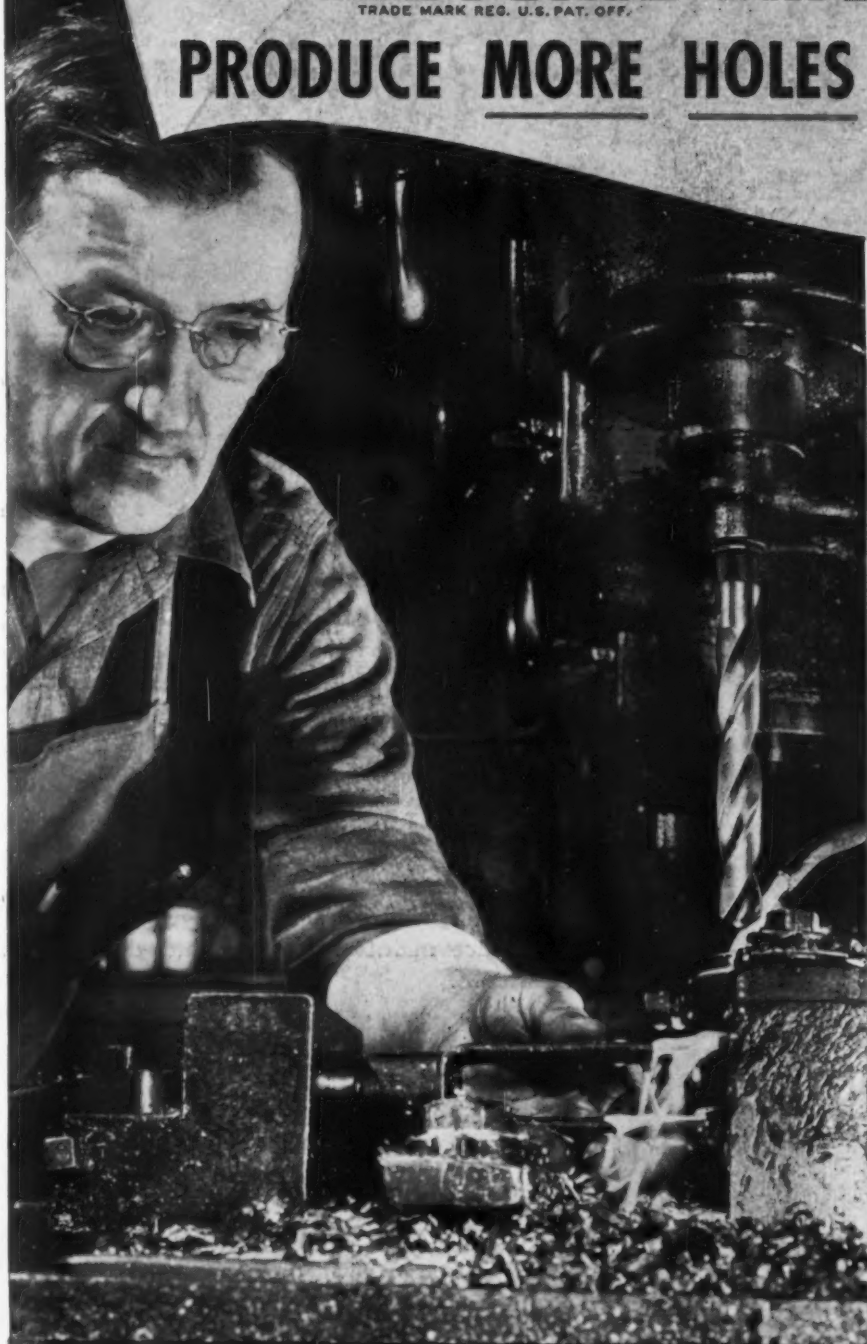
The American Society of Tool Engineers will hold its annual machine and tool exhibit in the Public Auditorium, Cleveland, Ohio, March 15, 1948. This is the only exhibit sponsored by the ASTE, and announcement of the 1948 exhibit is made at this time to avoid confusing this exposition with that being sponsored by the National Machine Tool Builders' Association which is to be held in Chicago, September 17th to 26th, 1947, and a Production and Machine Tool Show which is reported to be scheduled for the same dates in that city.

(Please turn to page 236)

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PRODUCE MORE HOLES PER GRIND



Whether it's a single or multiple spindle job, CLE-FORGE High Speed Drills always give you the biggest dollar-for-dollar value. In every drilling operation, they produce *more holes per grind*. ♦ The same economy can be obtained with other CLEVELAND tools—Reamers, Screw Extractors, Arbors, Mandrels, Sockets, Mills, Counterbores and MO-MAX High Speed Ground Tool Bits and Cut-off Blades.

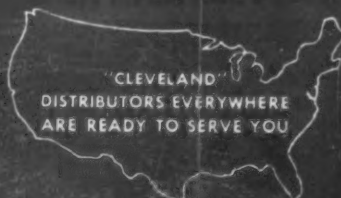


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How much is a valve worth?

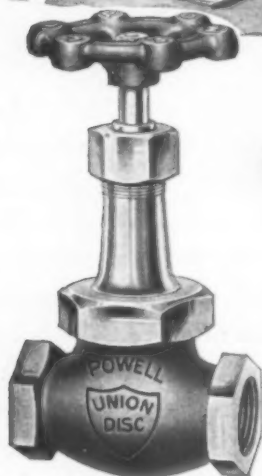
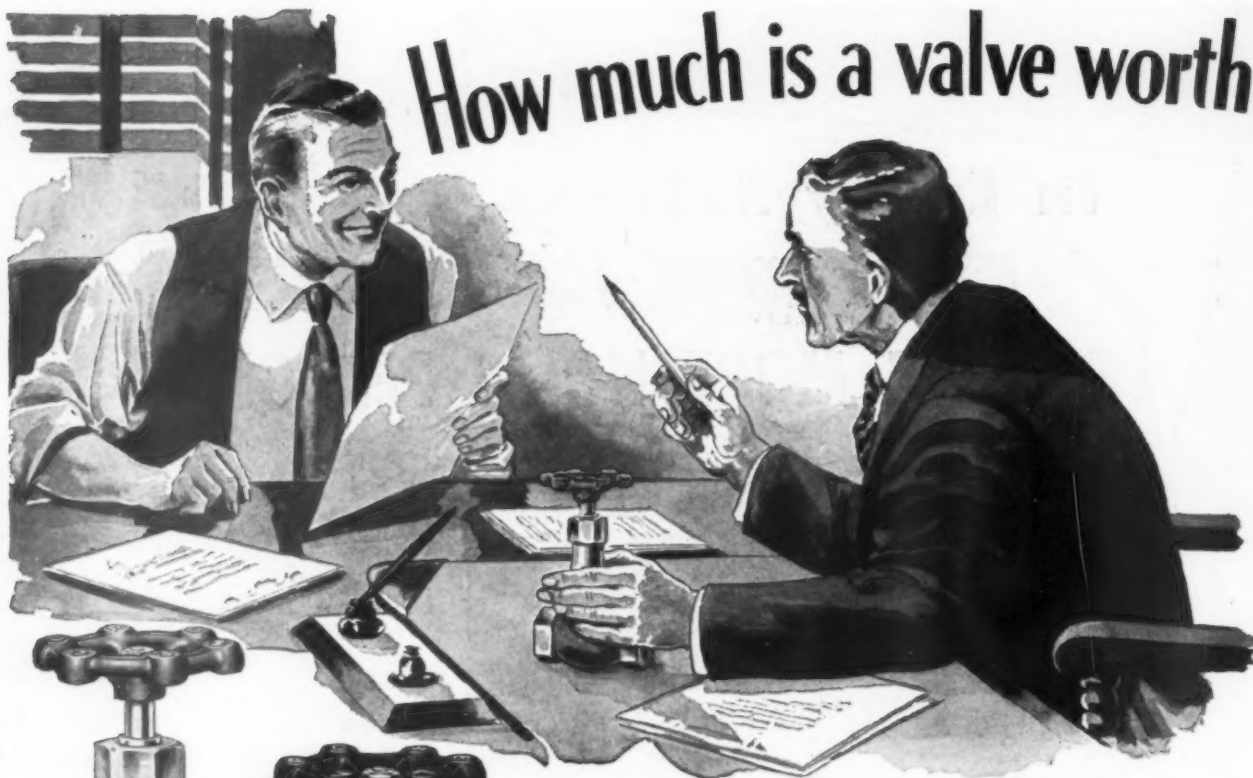


Fig. 150—150-pound Bronze Globe Valve with screwed ends, union bonnet and renewable composition disc.

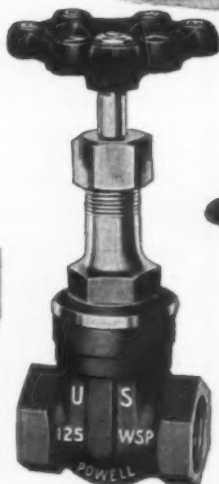


Fig. 500—125-pound Bronze Gate Valve with screwed ends, inside screw rising stem, screwed-in bonnet and either taper wedge solid or double disc.



Fig. 559—125-pound Iron Body Bronze Mounted Swing Check Valve. Flanged ends, bolted flanged cap and regrindable, renewable bronze seat and disc.



Fig. 1444—Large Iron Body Bronze Mounted Gate Valve for 125 pounds W.S.P. Has flanged ends, outside screw rising stem, bolted flanged yoke and taper wedge double disc.

The \$64 question is not "what is the price of the valve," but "how much is it worth?"

And the measure of its worth is "will it do the job, how long will it give satisfactory service, and what will be the ultimate cost of maintenance?" For in addition to the cost of labor and materials in maintaining a valve, don't lose sight of the serious loss in production while a valve is "down" for repairs or replacement.

The Powell Line is so complete* that there's always a Powell Valve specifically adapted to do the job. Powell Valves are noted for long-life, satisfactory service. Powell Valves are designed to reduce maintenance and shut downs to a minimum.

*The Powell Line includes Bronze and Iron Valves of every required type, design, size and pressure; Cast Steel Valves of every type, in pressure classes from 150 to 2500 pounds; and, for the chemical and process industries, a complete line of Corrosion-Resistant Valves in the widest range of pure metals and alloys ever used in making valves.

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Packages exert a tremendous influence in building customer good will. Naturally, your product carries the biggest load in this respect, but if ushered into your customers' homes under the friendly auspices of a set-up box—with its greater take-home value—your product will make more friends. Attractive in design and sturdy in structure, the set-up box is more practical and more desirable for re-use in the home than any other known package. Widespread usage of the set-up box in your customers' homes perpetuates your trademark, your signature, and your sales message. Inquire about set-up boxes today. Watch these ambassadors of good will make lasting friends of your customers.

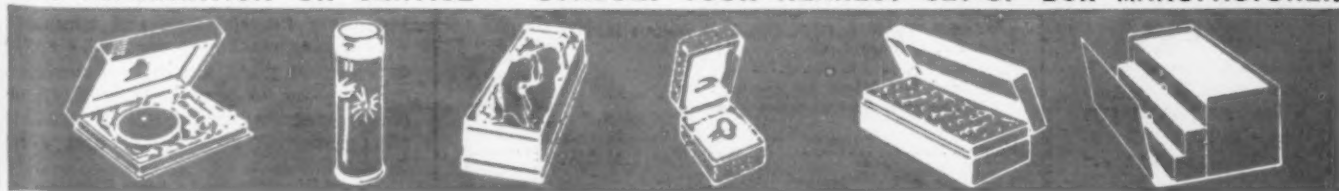


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CHICAGO WHEEL & MFG. CO.
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A sensational new grinding wheel makes its bow

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SILVER STREAK, engineered for super-swift performance, unprecedented efficiency in grinding and finishing; kept constantly FRESH by a protective metallic film! Try it yourself! Stronger than words is the proof you will see for yourself, in your own plant, that the new **SILVER STREAK** is the wheel you can't afford to

pass by, the wheel that solves your grinding problems. Tell us the kind of job you have. We'll send a test **SILVER STREAK** promptly.



The new "SILVER STREAK" will be shown for the first time at the Machine Tool Show in Chicago, Sept. 17. See it at Booth 47-C

MOUNTED WHEELS, the largest assortment available • GRINDING WHEELS • HANDEE Tool of 1001 Uses • HI-POWER GRINDER • The new HANDEE "44"

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 Dept. PG, Chicago 7, Ill.

- ☐ Send Test Wheel for use on
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INDUCTION, DIELECTRIC MANUFACTURERS FORM A PRODUCT GROUP IN NEMA

A new electrical product group, comprising eleven companies, nationally recognized as leaders in the young and rapidly expanding industry that manufactures apparatus for induction and dielectric heating, is announced by the National Electrical Manufacturers Association.

Chairman of the group, known as the Induction and Dielectric Heating Apparatus Section, is Dr. H. B. Osborn, Jr., sales manager, Tocco Division, The Ohio Crankshaft Company, Cleveland. C. W. Miller, sales manager, Industrial Electronics Division, Westinghouse Electric Corp., Baltimore, Md., is vice-chairman.

The section is defined as encompassing "induction and/or dielectric heating apparatus together with accessories, excluding renewal parts and physio-therapeutic apparatus — also excluded are motor generator sets and generators except when sold as parts of any complete induction and dielectric heating installation."

To best handle all technical aspects for the Section, a General Engineering Committee has been established—composed of the outstanding technical personnel in the high frequency heating field. The chairman is T. P. Kinn, manager, Industrial Electronics Engineering, Westinghouse, Baltimore.

Also formed was a Federal Communications Commission Committee, the chief purpose of which is to keep in touch with the FCC on matters of mutual interest.

1 1 1

BITUMINOUS COAL INDUSTRY PLANS MINING METHODS RESEARCH

The Bituminous Coal Industry has announced that it is making plans "for conducting research into new mining methods", with a view to reducing production costs. This announcement was made during a special meeting held in Pittsburgh recently under the auspices of Bituminous Coal Research, Inc., national research agency for the industry.

A large group of coal, land and railroad company executives attended the meeting called to consider "ways and means for rapid advancement of mining machines and methods to reduce the cost of coal production". The officials in attendance represented producers of over 200 million tons of annual bituminous coal production, owners of substantial land acreage and leading coal-carrying railroads.

The program presented to the group contemplates raising a special fund to finance a new research activity of the industry, naming a Mining Development Committee of top level executives representing the sponsors, and consulting with mining machinery companies as the development plans are being formulated.

Invitations to participate in this proposed program are being extended to all commercial and captive coal oper-

(Please turn to page 238)

"Phillips Screws Stopped Costly Damage by Slipping Drivers" says COLUMBUS SHOW CASE CO.

Right — No place for a driver to slip out of a screw head and run wild . . . and it doesn't with Phillips Screws.

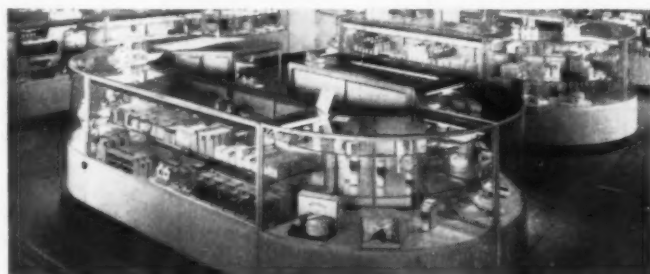
Below — With any other type screw than a Phillips, applications like these would require slow, careful, and costly driving.



Excerpts from another of the series of independent surveys by James O. Peck Co. of assembly savings made with Phillips Screws in leading plants.

"In show case assembly," explained the plant manager, "you're dealing with expensive, highly finished materials. That's one big reason we've been using Phillips Recessed Head Screws for over ten years.

"DRIVER SLIPPAGE ELIMINATED 100%. We went to Phillips Screws because we'd had so much driver slippage with slotted screws. A driver jumping out of the slot would often



Typical of the ultra-modern, beautifully finished show cases in which the Columbus Show Case Company uses thousands of Phillips Screws.

gouge finished wood, so that expensive repairs or an entirely new piece were necessary. Often costly plate glass would be broken. Phillips Recessed Head Screws put a stop to such spoilage completely.

"NO BURRED HEADS HAZARD. Phillips Screws don't burr, so polishing cloths are not snagged, or merchandise such as stockings and underwear damaged. In show cases for food, where moisture is present, this freedom from burring leaves the plating on screw heads intact so that there is no unsightly rusting.

"DRIVING TIME SHORTENED . . . APPEARANCE IMPROVED. The Phillips Recess is so much easier to locate that a "third hand" isn't needed in such operations as fastening together two pieces of wood. You start driving sooner and finish faster. And the attractive Phillips Head adds an extra touch of refinement to the show case design."

HOW MUCH COULD BETTER ASSEMBLY SAVE YOU? Send for the complete Columbus Show Case report and others, covering wood, metal, plastic products . . . packed with ideas for saving money on your assembly line. Mail the coupon TODAY.

PHILLIPS Recessed Head SCREWS

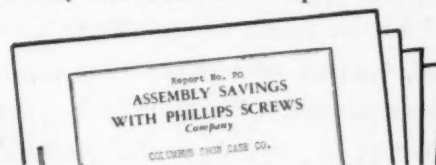
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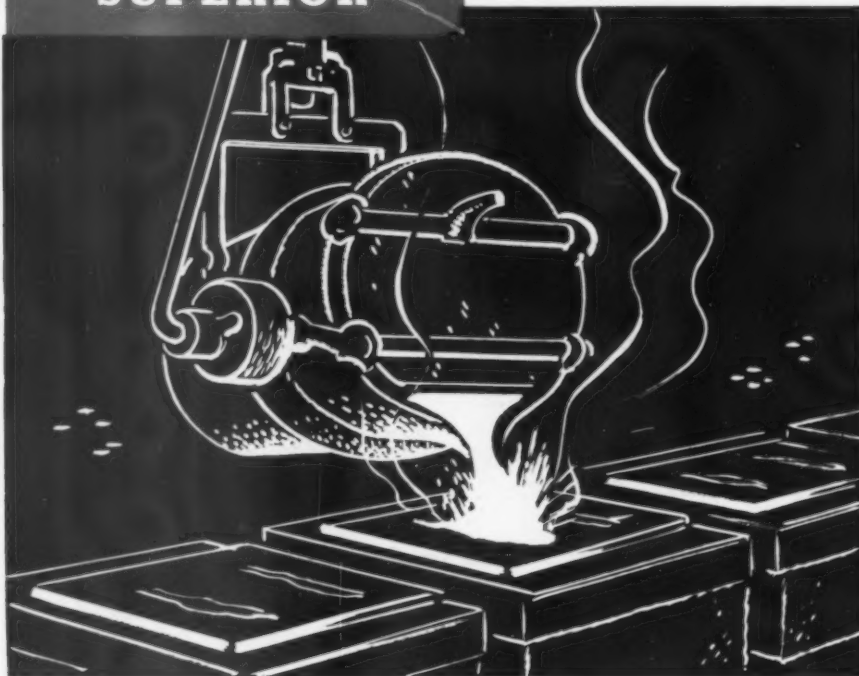
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Michigan 3078

(Continued from page 236)

ating companies in the United States, all coal land companies, and the railroads handling bituminous coal traffic.

1 1 1

COLD CATHODE LIGHTING EXHIBIT IN NEW YORK

Announcement is made of the First Annual Cold Cathode Fluorescent Lighting Exhibit, which is scheduled to be held at the Hotel Commodore, New York, N. Y., October 7, 8 and 9, by the Fluorescent Association, 14 Reade Street, New York, N. Y.

1 1 1

PACKAGING AND MATERIAL HANDLING INSTITUTE ANNOUNCED

Development of a one week Institute on Packaging and Material Handling techniques to be held September 29 through October 3 at the Rackham Memorial Building, Detroit, is announced by the Wayne University School of Business Administration to fill the demands of industry for a concentrated educational program at the executive level in this field.

Representatives from major industrial concerns throughout the United States and Canada have requested the setting up of such an Institute to provide the latest information and discussion on this problem. With the assistance of the Industrial Packaging Engineers Association, national professional group, the University has outlined a series of lectures by prominent packaging and material handling authorities to be followed by open forum discussions and exhibits.

Visits to industrial and commercial organizations in the Detroit area will provide visual demonstrations and practical applications of the principles involved. Present methods will be shown as well as discussions of changes and revisions incorporated in future plans to improve package and material handling.

Representing something new in academic approach, the Institute is designed to show the relationship and interdependence of packaging and material handling work with procurement, transportation, distribution, warehousing, traffic management, production and sales in modern business.

1 1 1

GIVE FULL DAY'S WORK TO COMMUNITY CHEST

Employees of the Cleveland Cap Screw Co., Cleveland, O., recently worked a full Saturday without cash return to themselves so that the wages they earned could be remitted by the company to the Cleveland Community Chest. Normally working a five day week, 95% of the employees turned out on Saturday to help the drive. The company's salesmen and representatives throughout the country gave their commissions on shipments made that day.

(Please turn to page 240)

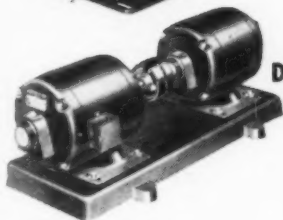
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GENERAL-PURPOSE D-C MOTORS

Designed for general-purpose applications. Often used with a-c and d-c conversion equipment. Gives you quiet operation. Comes in wide range of horsepower ratings and speeds.



D-C GENERATORS AND MOTOR-GENERATOR SETS

Recommended as d-c power unit for industrial devices or as exciters for large equipment. Available in output ratings of 125, 250, and 500 watts continuous duty; 125 and 250 d-c volts.



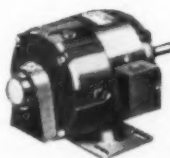
LOW-VOLTAGE SPECIAL D-C MOTORS

Operate from power sources commonly used on busses, trucks, railroad equipment, battery-operated industrial trucks, etc. Sturdy adaptable motors, built usually from general-purpose motor parts.



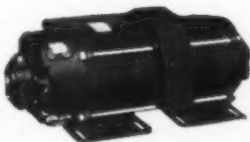
DYNAMOTORS

Give you reliable means of converting d-c power to other voltages, or to a-c. Recommended for neon signs, locomotive headlights, communication equipment, etc. A light but sturdy unit.



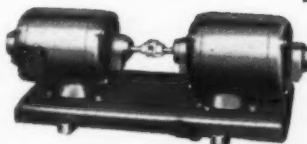
A-C GENERATORS

Offer you effective source of a-c current for places where it otherwise would be unobtainable. Available in standard ratings. Strong, well constructed power units.



MOTOR AMPLIDYNE-GENERATOR SETS AND AMPLIDYNE GENERATORS

Give unusually quick response over a wide range of operating loads. Thus, the amplidyne generators are suitable for many applications. Available in single units or assembled with motor drive.



HIGH-FREQUENCY MOTOR ALTERNATORS

Highly recommended for testing equipment and source of power supply for high-frequency machines. Small and lightweight units, but sturdy and hard-working.

It has been a long time since we have talked about short deliveries on fractional-horsepower motors. But our engineering and manufacturing facilities are now available to give you just that on d-c fhp motors, generators, and motor-generator sets. Whether you require a few motors or many, we are ready to help you.

Available for quick short deliveries are general-purpose d-c motors, d-c generators and motor-generator sets, low-voltage special d-c motors, dynamotors, a-c generators, motor amplidyne-generator sets and amplidyne generators, and high frequency motor alternators.

These equipments have a variety of applications. Our staff of experienced fractional-horsepower motor engineers can help you with design and application problems. These men accumulated a vast store of new "know how" from thousands of war jobs. Combine this with previous accumulation of design knowledge and application experience, and you have 46 years of experience at your service.

Whether it is a new or old application, we can help you. Save you time and money, too! For more information on the kinds of equipments we can offer you for quick delivery, write for GEA-4871, or call your nearest G-E office.

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Dusting unnecessary maintenance costs out of your plant picture is as easily done as said—and here's why: It's the time and labor involved—not the cleaning materials—which constitute by far the greater part of your sanitation costs.

And that's where, by utilizing a program of *planned* sanitation employing West products, you can just about cut maintenance man-hours and resulting costs to the bone. Longer-lasting . . . easier to apply . . . designed to do the best possible job in the least possible time, West maintenance products are economical and beneficial in still other ways.

By helping to insure employees' health, safety and morale, they give *added* protection to your workers, thereby reducing frequent absenteeism and high turnover.

For the answer to "greater profits through cleanliness," why not consult one of the 500 West trained representatives from Coast-to-Coast.



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CLEANSING DISINFECTANTS • INSECTICIDES • KOTEX VENDING MACHINES
PAPER TOWELS • AUTOMATIC DEODORIZING APPLIANCES • LIQUID SOAPS

HUGE ATTENDANCE EXPECTED AT CHICAGO MACHINE TOOL SHOW

Attendance at the Machine Tool Show to be held in the Dodge-Chicago Plant, Chicago, September 17th through 26th, may exceed the original estimate of 100,000, it was predicted today by Swan E. Bergstrom, Chairman of the Show Committee of the National Machine Tool Builders' Association, and Sales Manager, The Cincinnati Milling Machine Company.

Mr. Bergstrom said a tremendous attendance, both from the United States and abroad, is indicated by the heavy flow of advance registrations being received daily at the Association offices in Cleveland.

1 1 1

ASTE SEMI-ANNUAL CONVENTION TO BE HELD IN BOSTON

Predicting that better tools will result in better living, not only in this country but throughout the world, President W. B. Peirce announced the Semi-Annual Convention of the American Society of Tool Engineers.

This meeting is scheduled for October 30, 31 and November 1, in Boston's Statler Hotel where the entire Mezzanine Floor will be turned over to the expected 3500 convention guests from all parts of the United States and Canada.

"More efficient tools will lead the way to a sounder economy," Peirce declared. "And the best way we know to bring about this increased efficiency is through the free exchange of information and ideas in meetings such as the Boston Convention."

"With this goal in mind, the A.S.T.E. program committee has built the three-day meeting around a series of technical sessions covering a wide range of subjects, each of vital importance to tool engineering, and therefore to industry in general," Peirce continued.

At least three men who are leaders in the particular field will appear on each technical program. In addition, more than 20 widely varied industrial plants in the Boston area will be opened for tours by the A.S.T.E. convention visitors. On November 1, all the Massachusetts Institute of Technology's engineering Laboratories will hold open house for the convention visitors.

1 1 1

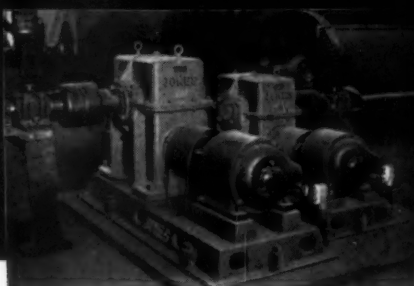
ELECTRIC INDUSTRIAL TRUCK ASSOCIATION MOVES

The office of the Electric Industrial Truck Association has moved to 2928 Forty-First Ave., Queens Plaza, Long Island City, N. Y. Activities of the Pittsburgh office and the administration office, formerly in Chicago, have been consolidated in New York.

Charles F. Kells, director of the educational program for the association, which was carried on from the Pittsburgh office, is in charge of the new headquarters.

(Please turn to page 242)

**Built to stand up
under 24 hour
a day service**



● Type H Heavy Duty Worm Gear Reducers driving 54-in. and 48-in. tumbling mills in steel foundry. Ratio 11-1/3 to 1 and 7-3/4 to 1.

TODAY every phase of production work calls for drives that will stay on the job. Jones Worm Gear Speed Reducers have been built for long, trouble-free service. And the records established by these speed reducers in 24 hour a day service show that they have the ruggedness and stamina for which all Jones Transmission Products are known.

For complete information on Jones Worm Gear Speed Reducers ask for Bulletin No. 68 and for Worm-Helical Reducers ask for Bulletin No. 75.

W. A. JONES FOUNDRY & MACHINE CO.
4453 Roosevelt Road, Chicago 24, Illinois

Jones

**HERRINGBONE—WORM—SPUR—GEAR SPEED REDUCERS • PULLEYS
CUT GEARS • V-BELT SHEAVES • ANTI-FRICTION PILLOW
BLOCKS • FRICTION CLUTCHES • FLEXIBLE COUPLINGS**



● Jones Worm-Helical Speed Reducer driving a lacquer agitator. A simple design prevents leakage of oil along the vertical low speed shaft.

RATIOS AND CAPACITIES

Jones Worm Gear Reducers are built in ratios from 4 to 1 up to 90 to 1 and in capacities from 1/4 to 100 H.P.

Jones Worm Helical Reducers for vertical shaft drives are built in ratios from 40 to 1 to 250 to 1 for all common motor speeds and a wide range of horsepower ratings.

ALLENUT

The New

internal wrenching, self-locking nut by ALLEN



This new internal-wrenching nut **HOLDS** with a weld-like grip, — *self-locking* in non-hardened metals. Knurled flutes are drawn down into counterbored hole as the screw is tightened in the nut. Yet easily removed without damage to nut or containing parts by backing off on screw and tapping screw on head.

Using **ALLENUTS** with Allen Socket Head Cap Screws, the positive *internal* wrenching action of Allen Hex Keys drives fast, firm set-ups in the harder metals. 12-point (double-hex) Allenut socket gives 30° of wrenching swing — as compared with a normal 60° — to speed up assembly in cramped quarters.

The **ALLENUT** sets up *flush* to achieve streamlined surfaces. It facilitates more compact designs with resulting economies in space, weight and material. Adds immensely to the finished appearance of any job... Precision-made of special-alloy steel to Allen standards; threads tapped to a Class 3 fit.

Ask your local Industrial Distributor for samples for test applications. Available only through authorized ALLEN Distributors.

THE ALLEN MFG. COMPANY
HARTFORD 1, CONNECTICUT, U. S. A.

CUSTOMER SERVICE CENTERS IN U. S. WAR ASSETS ADMINISTRATION

Following is a list of addresses of War Assets Administration Customer Service Centers throughout the United States as of June 20, 1947.

ALABAMA

Birmingham, 1704 2nd Ave., North, Montgomery, Old Post Office Bldg., Dexter Ave. & Laurence St., Mobile, Warehouse Bldg. T-104, 1701 Washington Ave.,

ARIZONA

Phoenix, Lateral 15 & W. VanBuren St., (Goodyear, Arizona)

ARKANSAS

Little Rock, Porbeck Bldg. 515 E. Second St.,

CALIFORNIA

San Francisco, 33 Berry St., Fresno, Fairgrounds at S. Maple St., Sacramento, McClellan Field, Bldg. T-627 A, 3460 Second Ave. Los Angeles, 155 W. Washington St. San Diego, 4205 S. Pacific Highway,

COLORADO

Denver, K'ttredge Bldg., 511 16th St., Grand Junction, 306 Main St.

CONNECTICUT

Hartford. 1112 Main St.,

DELAWARE

Wilmington, Drave Shipyard, Bldg. N-3,

DISTRICT OF COLUMBIA

Washington 25, Temporary Bldg. "R", 4th & Jefferson Dr., SW,

FLORIDA

Jacksonville, 115 Florida Ave., Miami, Burdine Quartermen Bldg., 901 N. E. Second Ave., Pensacola, 319 S. Palafox St., Tampa, 310 North Boulevard, Tallahassee, 322 South Monroe St.,

GEORGIA

Atlanta 5, 699 Ponce de Leon Ave., NE, Macon, 511-513 Third St., Savannah, 202 Oglethorpe Ave., W.,

IDAHO

Boise, 609½ Bannock St.,

ILLINOIS

Chicago, 404 S. Wabash Ave.,

INDIANA

Evansville, TH & M Bldg., Ohio St. & 12th Ave., Indianapolis, 2005 Northwestern Ave.,

(Please turn to page 244)

A COMPLETE LINE OF INDUSTRIAL PETROLEUM PRODUCTS

A Pure Oil engineer will help solve your lubrication problems. Write nearest office, or Industrial Lubrication Dept., Chicago, Ill.

The Pure Oil Company, U. S. A.

Be sure



with Pure

"1001" Styles of Industrial Gloves to Save Workers' Hands



Suit the glove
to the job
to cut your costs,
step up production

Steel ribbons, horizontally placed, reinforce all wearing surfaces of this rugged Olympic chrome leather gauntlet (#330C). Special palm patch gives added protection without loss of flexibility...thumb reinforced with patch strap...2" cuff protects wrist...glove entirely sewn with steel thread.

These features, typical of the outstanding Olympic glove line, produce long-wearing qualities at low cost. Styled for men or women. Olympic work gloves are used by hundreds of manufacturers wherever work stoppage or slow-down is threatened by hand injury. Remember—there's an Olympic glove for every industrial job.

FREE Send for Illustrated Catalog of Safety Work Gloves, Finger Protectors and Safety Apparel

OLYMPIC GLOVE COMPANY Inc.

95 Madison Ave., Dept. 9, New York 16, N. Y.





AMAZING all-purpose Electric IMPACT Tool

● What other electric tool would permit
you to ream 3/16" of metal from a steel
plate held in your hand!

Action photograph
Reaming 1/4" to 7/16" in steel plate
f32 at 1/5000 sec. Electroflash
Impact Tool fitted with No. 2 Morse
Taper Socket and 7/16" tapered reamer.

The amazing Ingersoll-Rand Impact Tool (the only uni-
versal electric rotary *Impact* Tool in the world) is easy to hold
... you get no torque reaction—no kick—no twist—under any
condition. A patented mechanism converts the power of the
electric motor into "rotary impacts" (1900 per minute) which
exert a more powerful turning effect than is produced by any
other electric tool of comparable size.

AMAZING! — Even if you stall the spindle completely
the motor continues to run—no burned out motors when you
use the  Impact Tool.

AMAZING! — You need only one (1)  Impact Tool
and standard attachments to perform all of the operations
listed.*

AMAZING! — Delivery from stock ... See your nearest
Jobber or Distributor.

- *
● Applies and
removes nuts
- Drills
- Reams
- Taps
- Drives and re-
moves screws
- Drives and re-
moves studs
- Extracts broken cap
screws and studs
- Runs wire brushes
- Does hole saw work
- Drills brick and masonry
- Drives wood augers

Uses standard attachments

Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y.

58-18

PRESENTING A NEW MEMBER
OF THE HOLO-KROME FAMILY...



**HOLO-KROME
FLAT HEAD
SOCKET CAP SCREW**

COMPLETELY COLD FORGED

Not drilled — broached — machined. Holo-Krome Fibro Forged Flat Head Socket Cap Screws are made by an exclusive Holo-Krome patented method whereby the Head and Body in fact, all portions of the screw (threads excepted, Standard Class 3 fit) are Completely Cold Forged. Fibro Forged Screws inherently have the completely continuous fibrous structure that results in increased strength. Specify "Holo-Krome" for Guaranteed Unfailing Performance.

see the new member and —
all the Holo-Krome family at
Booth 33-D

**MACHINE
TOOL SHOW**
(Dodge-Chicago Plant)
SEPT. 17-26



Your Holo-Krome Distribu-
tor Is Ready To Serve You
From His Warehouse Stock



THE HOLO-KROME SCREW CORP., HARTFORD 10, CONN., U. S. A.

HOLO-KROME
fibro forged **SOCKET SCREWS**

(Continued from page 242)

IOWA

Des Moines, Des Moines Ordn. Plant,
Building No. 2.

KANSAS

Wichita, Boeing Aircraft Plant No. 2,
Oliver Ave. & McArthur Rd.,

KENTUCKY

Louisville 2, 410-412 W. Jefferson St.,
Lexington, Building T-22, 13th & D Sts.,

LOUISIANA

New Orleans 17, 7020 Frankl'n Ave.,

MAINE

Portland, 148 Pickett St.,

MARYLAND

Baltimore, 8 South Calvert St.,

MASSACHUSETTS

South Boston, Army Base,
Worcester, 74 Front St.

MICHIGAN

Detroit, 13740 Oakland Ave., Highland
Park (3),

MINNESOTA

Minneapolis, Metropolitan Life Bldg., 125
Third St., S.,

MISSISSIPPI

Jackson, Army Air Base, Building #25,

MISSOURI

Kansas City, 95th St. & Bannister Rd.,
P. O. Box 1037,
St. Louis 1, St. Charles Bldg., 505 North
7th St.,
Springfield, W'lhoit Bldg., 323½ Persh-
ing Ave.,

MONTANA

Helena, Old High School Bldg., Law-
rence & Warren Sts.,

NEBRASKA

Omaha, 501 WOW Building,

NEVADA

Las Vegas, Basic Magnesium Plant, Caf-
eteria Bldg., (Henderson, Nevada),
Reno, Reno Army Air Base, Building
6502—3rd St. & East Ave.,

NEW HAMPSHIRE

Manchester, 88 Concord St.,

NEW JERSEY

Newark, 125 1st St.,
Trenton, 1450 Parkway Ave., W.,

NEW MEXICO

Albuquerque, Mountain Rd. & R.R.

(Please turn to page 246)

Rubber to Metal?



Call OHIO RUBBER CO.



● Selected at random from our records on rubber to metal jobs we handle for diversified industries are the few shown in brief, sketchy form above.

The almost countless applications of rubber to metal differ widely in details. But in every case, the selection of the best method of fastening is a prime factor.

Pioneers in the development of processes for bonding rubber to metal, we recently per-

fectected an additional method known as the "Quick-Clip" to meet conditions unfavorable to the usual bonding methods. An example is the rubber breaker strip in refrigerating cabinets as illustrated in one of the above sketches.

When you refer your rubber to metal problems to The Ohio Rubber Company, special attention is given to the most efficient method of fastening. We would like to work with you on your next rubber to metal problem.

THE OHIO RUBBER COMPANY • WILLOUGHBY, OHIO

FACTORIES: WILLOUGHBY, OHIO • LONG BEACH, CALIF. • CONNEAUTVILLE, PA.
BRANCH OFFICES: DETROIT • NEW YORK • CHICAGO • INDIANAPOLIS • CLEVELAND • BOSTON



for the latest ideas in packaging . . . "Call Cleveland"



Call for Cleveland SCREW CAP CONTAINERS

FOR A MULTITUDE OF USES these Screw Cap Containers are now available.

LENGTHS from the shortest possible to at least 60 inches.

TEN DIAMETERS available from 3/4" up to 3".

FINISHED with plain body . . . labeled or waxed if desired.

Cleveland Screw Cap Containers have exceptional STRENGTH obtained by our spiral, heavy wall construction. Threaded and capped at both ends if preferred.

FAST PRODUCTION and delivery from our nearest plant.

ATTRACTIVE PRICES based on our immense production capacity.

MANY WORTH-WHILE USES of these Screw Cap Containers include:

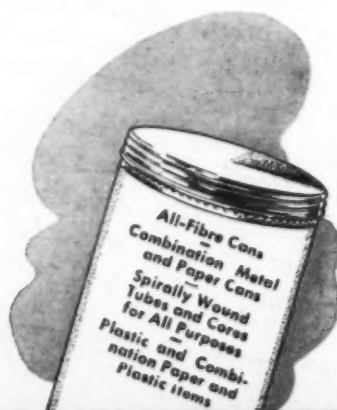
SAFETY AND LOWER COSTS IN SHIPMENT.

CONVENIENCE in step-by-step production in scattered departments.

MAILING . . . Testing Laboratory samples, oil samples, catalogs and expensive printing.

PACKAGING . . . Fishing rods, welding rods, maps, tracings, etc. And many other uses.

Consult our
Creative
Design
Department



The CLEVELAND CONTAINER Co.
6201 BARBERTON AVENUE CLEVELAND 2, OHIO

PRODUCTION PLANTS also at Plymouth, Wisc., Ogdenburg, N. Y., Chicago, Ill., Detroit, Mich., Jamesburg, N. J.
PLASTICS DIVISIONS at Plymouth, Wisc., Ogdenburg, N. Y. • ABRASIVE DIVISION at Cleveland, Ohio
New York Sales Office—1186 Broadway, Room 223

IN CANADA—The Cleveland Container Canada Ltd., Preval, Ontario

(Continued from page 244)
Tracks, P.O. Box 1351,

NEW YORK

Long Island City, 48-02 Northern Blvd.,
Albany, Watervliet Arsenal,
Buffalo, 190 Delaware Ave.,

NORTH CAROLINA

Charlotte, 317 South Tryon St.,
Greensboro, Ord. Building T-2, E. 9th &
Bessemer Sts.,
Wilmington, 206 North Second St.,

NORTH DAKOTA

Fargo, De Lendrecie Bldg., 620 Front
St.,

OHIO

Cincinnati 1, 704 Race St.,
Cleveland, Euclid E. 13th St.,
Columbus 15, 245 N. High St.,
Dayton, 2400 W. Dorothy Lane,
Lockland, Wright Aeronautical Plant,
Toledo, 241 Cherry St.,
Springfield, 1076 Kenton St.,

OKLAHOMA

Tulsa, 2000 N. Memorial Drive,
Oklahoma City, P. O. Box 426,

OREGON

Portland 8, Barrack #32, Swan Island,
P. O. Box 4062,

PENNSYLVANIA

Philadelphia, 2401 Chestnut St.,
Harrisburg, 1400 N. Cameron St.,
Pittsburgh, Victory Bldg., 212 9th St.,

RHODE ISLAND

Providence, 1 Washington Ave.,

SOUTH CAROLINA

Charleston, Tradd St. & East Bay, Box
275,
Columbia, 1201 Pulaski St.,
Greenville, 200 N. Main St.,

SOUTH DAKOTA

Sioux Falls, Wilson Terminal Bldg., 513
West 8th St.,

TENNESSEE

Nashville, WAA Bldg. Vultee Boulevard,
Chattanooga, Ochs Bldg., 736 Georgia
Ave.,
Knoxville, Miller Bldg., 10th & Clinch
Sts.,
Memphis, McDonnell Aircraft Bldg.,
P. O. Box 158

TEXAS

Dallas, North American Aviation, Inc.,
Plant "B"—P. O. Box 6030,
El Paso, 620 Magoffin Ave.,
Houston, 7700 Wallisville Road,
San Antonio, Transit Tower, 306 S. St.
Mary's St.,

(Please turn to page 248)

SHORT CUTS TO BETTER PARTS



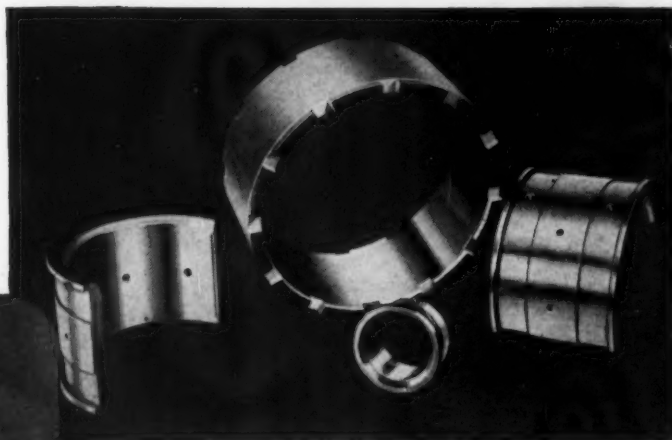
Seamless and Welded Tubular Products in a full range of Carbon, Alloy, and Stainless Steels for All Pressure and Mechanical Applications.

★ ★ ★

Other B&W Products

THE BABCOCK & WILCOX CO.
85 LIBERTY STREET · NEW YORK 6, N. Y.

Stationary and Marine Boilers . . . Boiler Components . . .
Pulverizers . . . Fuel Burning Equipment . . . Refractories . . .
Chemical Recovery Units . . . Process Equipment . . .
Alloy Castings.



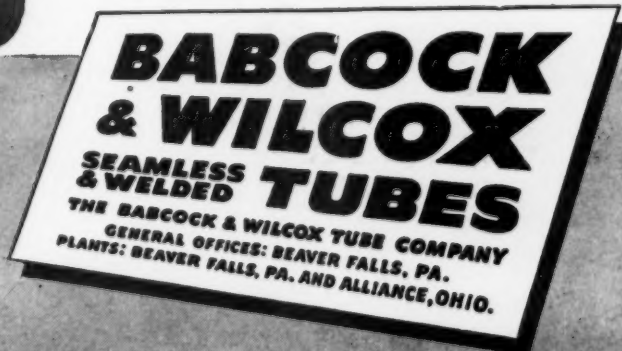
MECHANICAL TUBING *seamless and welded* FOR ANY APPLICATION

Hollow structural assemblies and precision working parts made from B&W Mechanical Tubing give *lightweight* construction with *heavyweight* ruggedness and dependability—show important savings in production time, costs and materials over the use of forgings and bar stocks.

From its modern specialty tube mills, B&W can supply mechanical tubing—either seamless or welded—of the proper analysis, size, gauge, temper and finish for making practically any hollow machined or fabricated part . . . better, faster, cheaper. In fact B&W Mechanical Tubing embraces the widest range of analyses available from one source. So no matter what kind of steel tubing you need—from plain carbon to high alloy grades—B&W makes it.

You'll find a lot of present uses of B&W Mechanical Tubing that may suggest future savings for you in Bulletin TDC-123. Send for a copy today.

TA-1409 M





LUBRIPLATE maintains a durable, load carrying film at the "Friction Point," which reduces friction, retards progressive wear and prevents rust and corrosion. That is why gears lubricated with LUBRIPLATE last longer and run better. Don't take our word for it. Prove it to yourself. Thousands have in every industry.

LUBRIPLATE

Lubricants definitely reduce friction and wear to a minimum. They lower power costs and prolong the life of equipment to an infinitely greater degree. LUBRIPLATE arrests progressive wear.

LUBRIPLATE

Lubricants protect machine parts against the destructive action of rust and corrosion. This feature alone puts LUBRIPLATE far out in front of conventional lubricants.

LUBRIPLATE

Lubricants are extremely economical for reason that they possess very long life and "stay-put" properties. A little LUBRIPLATE goes a long way.



(Continued from page 246)

UTAH

Salt Lake City, 1710 S. Redwood Rd.,

VERMONT

Burlington, Hotel Van Ness, 127 Main St.,

VIRGINIA

Richmond 19, 620 East Main St.,

WASHINGTON

Seattle, 1409 Second Ave.,
Spokane, 157 S. Howard St.,

WEST VIRGINIA

Charleston, Peoples Bldg., 179 Summers St.,

WISCONSIN

Milwaukee, 4574 N. Port Washington Rd.,

WYOMING

Casper, Old City Hall, 722 S. Center St.,
Cheyenne, Federal Recreation Bldg., 2002 Capital Ave.



SURPLUS EQUIPMENT AT FIXED PRICES NOW AVAILABLE TO NON-PRIORITY BUYERS

Large quantities of metal cutting, industrial, and electrical equipment are now available at fixed prices to all buyers without priority at War Assets Administration warehouse nineteen, Seneca Shipyards, Seneca, Illinois, according to Bruce J. Brown WAA regional director at Chicago.

Brown added that there is also some industrial furniture, and automotive and construction parts for sale at the Seneca warehouse. Information concerning this government surplus may be obtained at WAA Customer Service Centers, 404 South Wabash Avenue, Chicago, 4, or at 4574 North Port Washington Road, Milwaukee, Wisconsin.

A special listing, CG-63-1211, offering pumps, blowers, fans, isolators, compressor, gasoline and Diesel engines, and portable power tools acquired by the government at a cost of \$180,000 is in the process of publication, and may be obtained at the Chicago or Milwaukee Customer Service Centers.

Catalogs CG-85-1162 and CG-85-1163 now available at either of those centers give listings of some of the machine tools available in the Chicago region.

The first mentioned catalog lists \$3,000,000 of surplus tools located at warehouse five, 3200 Sheffield Avenue, (Wolf Lake) Hammond, Indiana, and includes boring, drilling, gear cutting, grinding, milling, metal forming and cutting, and inspection and measuring machines, and lathes.

Catalog CG-85-1163 covers \$2,500,000 worth of boring, drilling, gear cutting and finishing, milling, and screw ma-

(Please turn to page 250)

How to **SAVE SAFELY** on



Let's lay the cards on the table.

First—How good does that particular spring really need to be? Are severe conditions of service to be the rule or the exception? Are close tolerances, rigid inspections really necessary? They add to costs.

Next—could it be designed some simpler way that would cost less to produce? Is special material necessary or will some standard spring material suffice? Has your spring maker the equipment best for your job? These and a dozen other factors affect the price of springs.

Let's work on it together. We have the skill, the experience, the facilities to really help.

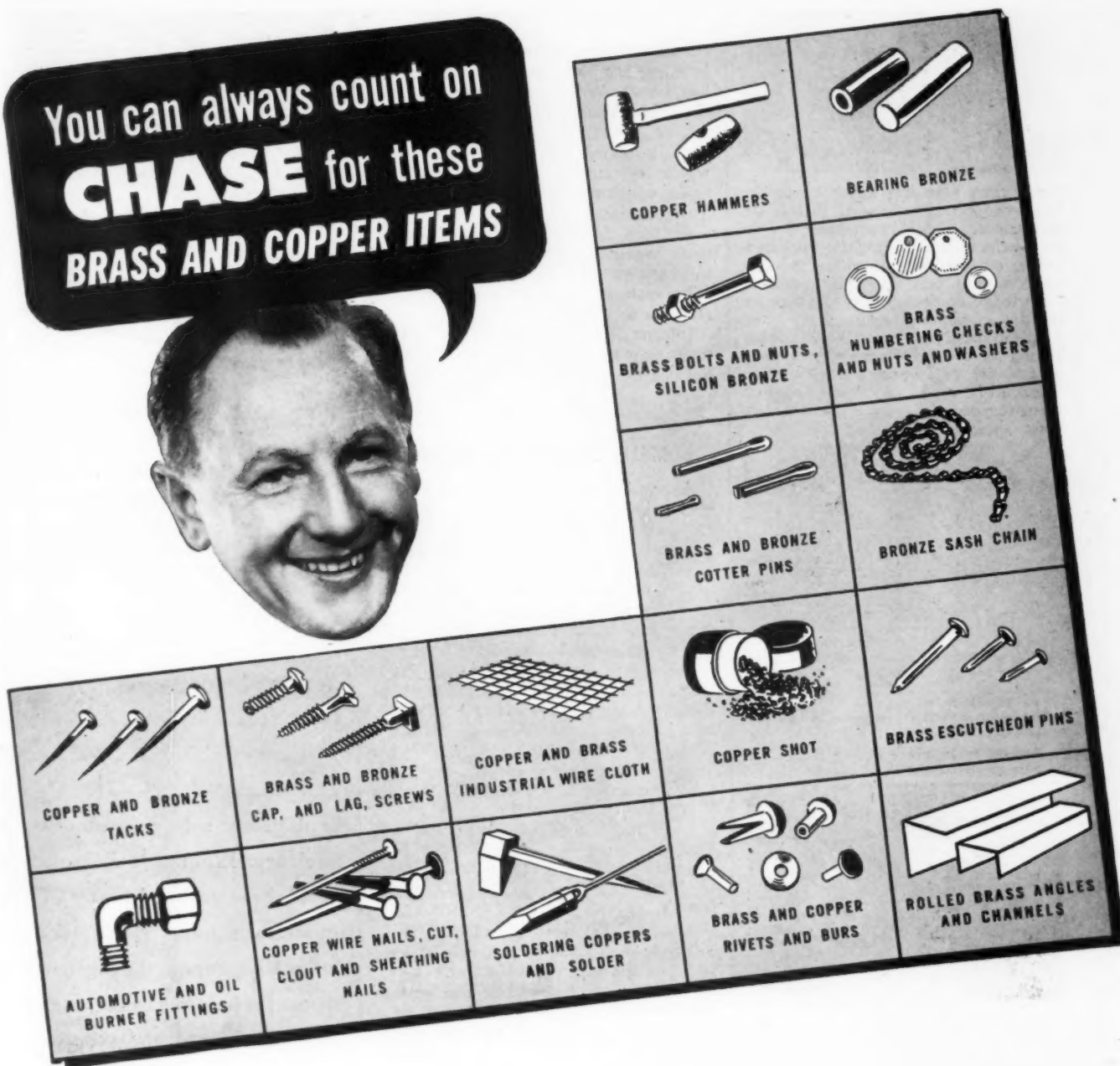
WRITE, WIRE OR PHONE

ILLINOIS
COIL
SPRING
COMPANY

SINCE
1928

2100 N. MAJOR AVE. • CHICAGO 39, ILL.
TELEPHONE BERKSHIRE 6464

You can always count on
CHASE for these
BRASS AND COPPER ITEMS



A wide variety of Chase brass and copper miscellaneous items is always within your reach. Every one of the items shown is stocked by Chase.

Not all of them at each of the 21 warehouses from coast to coast . . . but if your *local* Chase warehouse hasn't the item you want, they'll try to get it for you from a warehouse that *has*.

Chase

WATERBURY 91, CONNECTICUT

the Nation's Headquarters for
BRASS & COPPER

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

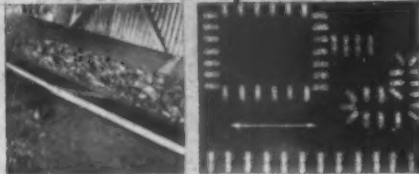
THIS IS THE CHASE NETWORK . . . handiest way to buy brass

ALBANY ATLANTA BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DETROIT HOUSTON INDIANAPOLIS KANSAS CITY, MO. LOS ANGELES MILWAUKEE MINNEAPOLIS
NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER SAN FRANCISCO SEATTLE ST. LOUIS WASHINGTON (Indicates Sales Office Only)

Present Day Practice in Belt Fastening

Every man who has anything to do with the purchase, application or maintenance of conveyor, transmission or V-belts will find the bulletins listed below of considerable value in connection with belt fastening work. A knowledge of present day practice in belt fastening helps reduce the loss in machine hours due to belt failures caused by the use of the wrong type of fastener or improper application. We shall be glad to send any or all of them to you or to any of the men in your organization.

For Conveyor Belts



FLEXCO HD Belt Fasteners are used to make a "water-tight" butt joint in conveyor belts ranging from $\frac{1}{4}$ " to $1\frac{1}{2}$ " thick and of any width. The view on the right shows the various types of rips that can be repaired with these fasteners and Flexco HD Rip Plates.

Bulletin F-100 gives complete details on how to fasten and repair conveyor belts.

For V-Belts



ALLIGATOR V-Belt Fasteners are now being widely used to fasten B, C and D, open-end V-belt of cross woven fabric core construction now being made by most belting manufacturers. The view at the left shows a typical application of these fasteners to a drive where endless V-belts would require dismantling the machinery to put the belts on the sheaves.

Bulletin V-205 gives complete instructions on how to use V-belt fasteners.

FLEX V Fasteners for A and B belts are also available for lighter duty V-belt drives. Ask for Bulletin V-14.

For Transmission Belts



"JUST A HAMMER TO APPLY IT"

ALLIGATOR Steel Belt Lacing is in world-wide use to make smooth, flexible joints in leather, rubber, balata, stitched canvas or solid woven belts up to $\frac{3}{8}$ " thick and as wide as they come.

Bulletin A-60 tells how to fasten and repair transmission belts.

Sold by Supply Houses Everywhere

FLEXIBLE STEEL LACING COMPANY
"69" Lexington Street, Chicago 44, Ill.

(Continued from page 248)

chines, and turret lathes, grinders, presses, bumping hammers and other machines all located at WAA warehouse six 6351 Columbia Avenue, Hammond, Indiana.

War Assets Administration announces, also, a sealed bid sale of \$49,000,000 worth of cutting tools, thousands of types, which are available immediately at bargain prices.

Included in the offering of cutting tools are metal turning tools for metal turning machines, cutting tools for machine tools, and tool room specialties in all sizes and types.

Information concerning the cutting tools may be obtained at any Customer Service Center in the United States.

1 1 1

SURPLUS PRIMACORD OFFERED

Approximately 30,000,000 feet of surplus primacord, a commercial detonating fuse, are being offered for sale at $1\frac{1}{2}$ cents per foot, f.o.b. location, by the War Assets Administration.

The primacord, consisting of an explosive core of PETN in a flexible, waterproofed fabric covering, is used for firing high explosive blasting charges. It is about one-fourth inch in diameter, weighs about 15 pounds per 1,000 feet and has a tensile strength of 113 pounds. It is wrapped on wooden spools in lengths of 50, 100, and 1,000 feet. Minimum quantity for purchase is 5,000 feet. The following amounts are available through WAA Regional offices:

New York, 7,000,000 feet; Chicago, 522,100 feet; Cincinnati, 3,871,000 feet; Grand Prairie, Tex., 113,250 feet; Denver, 3,031,300 feet; Los Angeles, 2,522,500 feet; Nashville, 2,160,100 feet; Omaha, 147,700 feet; Philadelphia, 503,300 feet; Salt Lake City, 9,163,500 feet; and San Francisco, 632,100 feet.

Offers to purchase all or any part of this material will be accepted until noon June 25, 1947, by the regional offices having supplies, and filled in the following sequence: (a) certified veterans of World War II, (b) subsequent priority claimants, (c) non-priority purchasers. All orders received after this date will be filled without regard to priorities.

1 1 1

COMMERCIAL STANDARD FOR AUTOMOTIVE LIFTS ADOPTED

A Commercial Standard for Automotive Lifts, identified as CS142-47, will become effective as a voluntary standard of the trade from October 1, it has been announced by the National Bureau of Standards, U. S. Department of Commerce. The standard was adopted after signed acceptances had been received from a number of manufacturers, distributors, and users, estimated to represent a satisfactory majority.

Printed copies of the standard will be mailed to non-acceptors on specific request to the bureau.

(Please turn to page 252)

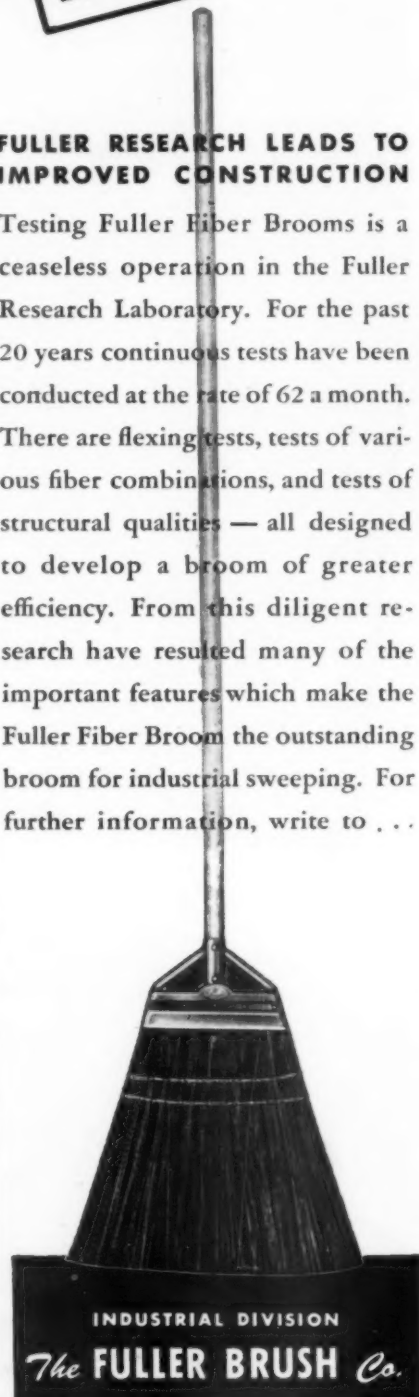
62 TESTS EACH MONTH

To Give You A BETTER BROOM

FULLER RESEARCH LEADS TO IMPROVED CONSTRUCTION

Testing Fuller Fiber Brooms is a ceaseless operation in the Fuller Research Laboratory. For the past 20 years continuous tests have been conducted at the rate of 62 a month.

There are flexing tests, tests of various fiber combinations, and tests of structural qualities — all designed to develop a broom of greater efficiency. From this diligent research have resulted many of the important features which make the Fuller Fiber Broom the outstanding broom for industrial sweeping. For further information, write to . . .



INDUSTRIAL DIVISION

The FULLER BRUSH Co.

DEPT. 979

HARTFORD 2, CONNECTICUT

Take a tip from



FRANK H. STRASBURGER
 SALES MANAGER
 CONTRACT PARTS DEPARTMENT
 BRIDGEPORT BRASS COMPANY
 BRIDGEPORT, 2, CONN. PHONE 4-1192




Harry L. Friedauf, Purchasing Agent of Pyrene Manufacturing Company bends a willing ear to the story of the excellence of the production facilities of Bridgeport Brass Company. Sales Manager Frank Strasburger is at right.

"The P.A. is a Vital Factor..."

"To do a basic and complete selling job, I naturally call on the P. A.," says Mr. Strasburger, Contract Parts Department Sales Manager of the Bridgeport Brass Company. "After all, his job is to know and judge responsible supply sources for his company's requirements . . . Procurement is a matter of 'teamwork' in most companies, and the P. A. is a vital factor in deciding who gets business. Naturally I make it my business to inform him completely on my company's services and facilities."

Any sales manager will tell you that you have to sell

the P.A. sooner or later. And, many believe the proper way is to sell him first. That's why *Purchasing* heads the list on so many well-balanced advertising schedules. It is the sure way to get "printed selling" to the Purchasing Agent. It is the Purchasing Agent's own book, the one he never misses.

To see the full weight of the job that *Purchasing* can do for you, write for complete information to 205 East 42nd Street, New York 17, N. Y. Offices in Chicago, Cleveland, Los Angeles.



PURCHASING

THE NATIONAL MAGAZINE FOR PURCHASING EXECUTIVES



**A CONOVER-MAST
PUBLICATION**

IF THE GEARS IN YOUR PRODUCT ARE *custom-cut* BY PERKINS...

You can stake its reputation on its trouble-free power transmission



● Great as the demand has been . . . large as the quantities produced have been, Perkins Custom-Cut Gears are, first and foremost, the product of a reliable gear-engineering organization.

The key-personnel is largely composed of New England craftsmen who have learned their business the hard way — through experience in the shop as well as appropriate schools. While we by no means wish to imply that the men at our disposal constitute a monopoly of the country's gear engineering brains, we do believe that we are capable of producing custom-cut gears which will stand up well under any comparative test.

● PERKINS MAKES — In All Materials, Metallic & Non-Metallic Helical Gears, Bevel Gears, Ratchets, Worm Gears, Spiral Gears, Spur Gears, Ground Thread Worms

**PERKINS MACHINE
& GEAR Company**

Springfield 2, Massachusetts

You Furnish the Specifications
We'll Produce the Gears!

LARGER DISCOUNT ON SURPLUS MACHINE TOOLS FOR RESALE

An increase from 12½ percent to 17½ percent discount on surplus standard general purpose machine tools has been granted by War Assets Administration to machine tool rebuilders, manufacturers, exporters, dealers or other distributors who purchase for resale.

The increased discount, which applies to fixed price tools generally considered in long supply, was authorized in a summary of procedures and instructions distributed to all WAA Zone and Regional Offices on the disposal of machine tools.

In the case of short-supply, easy-to-sell machine tools no discount or commission will be allowed during the first ten days of a sale to commercial buyers.

The discount plan, worked out by WAA officials after consultation with dealers who have been large sellers for WAA, recognizes that dealers will have an important part in speeding up the disposal of long-supply machine tools. The commission (12½ percent) to WAA Approved Dealers for effecting sales of machine tools remains the same.

The new instructions also provided for cataloging of all surplus machine tools as to description, location and price. Catalogs will be made available to purchasers at WAA Customer Service Centers and will be kept current by means of deletion lists.

Regional Directors were authorized under the instructions to determine short supply items in their regions. Formerly this determination was made by a national list. Short supply items, under the Surplus Property Act, must be offered first to priority claimants.

Tools for Institutions

Applications for donations of standard general purpose machine tools to agencies or institutions supported by federal, state and local governments and non-profit educational and charitable institutions will be received during an offering and will be acted upon thirty days after the sale to non-priority purchasers. All special machine tools are available at any time for the donation program after screening for the Joint Army-Navy Machine Tool Program. Donations will be made on an f.o.b. shipping point basis, except that donees shall pay any direct costs which may be involved in skidding, packing, or crating, and loading in preparation for shipment. Discounts to schools remain unchanged.

1 1 1

THE WAR SURPLUS PROBLEM

Billions in war surpluses will, in his opinion, be relegated to a political junkyard, Robert M. Littlejohn, War Assets Administrator, warned recently, if Congress follows recommendations of the House Surplus Property Subcommittee that present priorities be retained.

In answer to criticism leveled at WAA by the Surplus Property Subcommittee of the House Committee on Expenditures in Executive Departments, Administrator Littlejohn declared that the tenor of the

(Please turn to page 254)

CHEMICALS for the METAL INDUSTRIES

...SPECIFY "GENERAL CHEMICAL"

... UNIFORMITY—DEPENDABILITY

ELECTROPLATING

Acetic Acid
Ammonia Alum
Ammonium Thiosulfate
Solution
Aqua Ammonia
Chromium Fluoride
Fluoboric Acid
Hydrofluoric Acid
Hydrogen Peroxide
Metal Fluoborate Solutions
Muriatic Acid
Nitric Acid
Potash Alum
Potassium Cyanide
Sodium Fluoride
Sodium Metasilicate
Stannous Chloride
Sulfuric Acid
Tetrasodium Pyrophosphate
Trisodium Phosphate

STEEL

Rimming Steel Manufacture

Sodium Fluoride

Steel Manufacture

Sodium Bisulfite, Anhydrous
Sodium Sulfite, Anhydrous
Sulfur
Iron Sulfide

Descaling

Glauber's Salt
Sulfuric Acid

Pickling

Acetic Acid
Hydrofluoric Acid
Muriatic Acid (Hydrochloric)
Nitric Acid
Sulfuric Acid
Nitric Cake
Sodium Fluoride
Sodium Bifluoride



LIGHT METAL CASTING

Ammonium Fluoborate
Potassium Fluoborate
Sodium Fluoborate

HEAT TREATING

Barium Fluoride
Sodium Fluoride
Potassium Fluoride
Potassium Cyanide

FINISHING

Electrolytic Polishing

Acetic Acid
Perchloric Acid
Sulfuric Acid
Hydrofluoric Acid

Bright Dipping

Hydrofluoric Acid
Nitric Acid
Sulfuric Acid
Muriatic Acid (Hydrochloric)

Oxide Finishing

Copper Sulfate
Hydrofluoric Acid
Nitric Acid
Oxalic Acid
Sodium Silicate
Sulfuric Acid

Galvanizing

Sodium Fluoride
Hydrochloric Acid
Sulfuric Acid

ALKALI CLEANING

Aqua Ammonia
Sodium Silicate
Trisodium Phosphate (TSP)
Tetrasodium Pyrophosphate,
Anhydrous
Sodium Metasilicate

FOR METAL ANALYSES: BAKER & ADAMSON LABORATORY REAGENTS AND FINE CHEMICALS

GENERAL CHEMICAL COMPANY

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Buffalo • Charlotte • Chicago • Cleveland • Denver • Detroit • Houston • Kansas City
Los Angeles • Minneapolis • New York • Philadelphia • Pittsburgh • Providence • San Francisco
Seattle • St. Louis • Wenatchee • Yakima (Wash.)

In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.

In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

BASIC CHEMICALS

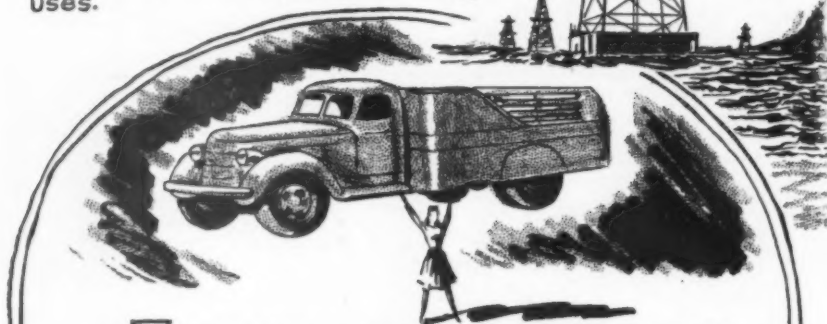


FOR AMERICAN INDUSTRY

CAN YOU GUESS THE ANSWERS?

WHAT WORKS AS WELL 5 MILES UP AS 3 MILES DOWN?

It works under water, too—but it's not a pen. It's wire rope. Aircraft cables, oil well drilling lines and commercial fishing lines are all made of wire rope. ACCO's American Cable and Hazard Divisions make wire rope for these and hundreds of other uses.



HOW CAN A GIRL LIFT A TRUCK?

A two-ton capacity truck weighs about 8,000 pounds gross. It would take 53 men to lift it. But a girl can lift one end easily with a 4-ton Manley hydraulic jack. ACCO's Manley Division makes jacks as well as other garage and service station equipment.



HOW COLD IS ICE?

Pure water freezes at 32° Fahrenheit or 0° Centigrade. Ice is just as cold as the air around it. Extreme cold keeps some valves from working well. One product of ACCO's Reading, Pratt & Cady Division is a special kind of nickel steel valves for use in sub-zero temperatures.

These are only a few of the primary products made by the 17 divisions of ACCO: Chain • Wire Rope • Aircraft Cable • Fence • Welding Wire • Cutting Machines • Castings • Wire • Springs • Lawn Mowers • Bolts and Nuts • Hardness Testers • Hoists and Cranes • Valves • Pressure Gages • Automotive Service Equipment.

ACCO



AMERICAN CHAIN & CABLE BRIDGEPORT CONNECTICUT

(Continued from page 252)

Subcommittee's report of June 28 came as no surprise in view of the fact that it has relied "for the most part on an inexperienced staff and disgruntled employees for source data."

"The American public is being asked to believe that the Surplus Property Program has been successful," the Administrator said. "That is not so."

"The War Assets Administration has been called upon to set up and administer a merchandising effort involving some 35 billion dollars, in the face of rigid statutory restrictions regarding personnel management and sales. No such assignment of like magnitude has ever before been undertaken by a Federal agency.

"At no time in the history or development of American business has the responsibility of top management been greater than it is today in the War Assets Administration.

"In any business enterprise, the success depends on attainment of planned objectives. When we examine the accomplishments of the Government Surplus Property Program, notwithstanding the statutory requirements imposed by the Congress, it should be gratifying to the American public that of 35 billion dollars of Government property left over from World War II, its Government has sold to American veterans, industry, and business approximately 18 billion dollars; that as a result there reposes in the Treasury a sum of \$2,485,000,000, with the prospect that on or before June 30, 1948, the Surplus Property Program can be liquidated entirely or reduced to a relatively small residue without disturbance to our national economy or interference with reconversion to peacetime operation."

Mr. Littlejohn declared that all reasonable priority requirements for personal property can and should be taken care of by December 31, 1947, and WAA should enter a liquidation cycle on personal property.

"My philosophy is to sell out and get out in the interest of the common good, thereby giving the taxpayer a break," he explained.

He called attention to the recommendation that the Slaughter report provided: "That the Surplus Property Act be so amended as to eliminate all existing priority categories, with the exception of Federal governmental agencies purchasing for their own use, for the purchase of property other than real property."

1 1 1

NEW C F C RULE NO. 41 CORRUGATED FIBREBOARD BOXES

Corrugated medium must weigh not less than 26 pounds per 1000 square feet—no weight specified in present rule. The new rule does not contain the provision permitting a maximum variation of 5% in board weights. Board must now meet the weights specified—i. e., boxes grossing 40 pounds must be fabricated of 175 pound board; gross weight 65 pounds must be made of 200 pound

(Please turn to page 256)

This is a LEATHER GASKET



It will insure positive sealing, maximum resistance to pressures and temperatures, remain impervious to contacting fluids, and withstand frictional wear. Sirvis engineers will design special washers from selected leather, tanned and treated to the right degrees of hardness and resilience, cut on precision dies and leveled to the exact thickness demanded by your specifications.

SIRVIS

MECHANICAL LEATHERS

Products of

CHICAGO RAWHIDE MANUFACTURING CO.

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New York • Philadelphia • Detroit • Los Angeles • Cleveland • Boston
Pittsburgh • San Francisco • Cincinnati • Portland • Syracuse • Peoria



Improve
Radios . . Inter-Com Systems
with
Cellusuede
FLOCK

Add acoustical qualities to radios and inter-com systems by coating cabinets with cotton or Rayon Cellusuede Flock.

This low-cost, easily applied material helps to eliminate hum and sound interference . . . acts as a squeak-proof gasket when applied to adjoining wood or metal surfaces . . . forms a nonsagging, attractive speaker panel when sprayed on common mesh screen.

You'll notice, too, that market value as well as operating efficiency increases once you use Cellusuede Flock on many component parts of your product. Send today for samples, booklet, and prices of this extraordinary coating material.

Chicago Telephone No.
ENTERPRISE 3035



(Continued from page 254)

board—that is the *minimum* test (Mullen or Cady) per square inch. Boxes weighing 90 pounds gross must test 275 pounds per square inch (Mullen or Cady). There are other boxes but the 40, 65, and 90 pounds gross are the ones most extensively used in the paint and varnish industry. Sealing: Detailing provisions are prescribed requiring that on glued flaps 50% or more of the area of contact be firmly glued; or if flaps are stitched, riveted or stapled, the distance between fastenings must not exceed 2½" except as noted; and if sealed with paper sealing strips, *all outer seams* must be securely sealed—with specification paper sealing strips. Effective date: Shipments in fibre boxes manufactured prior to June 15, 1947, the effective date of this rule, and which boxes comply with the requirements of Rule 41 in effect prior to June 15, 1947, will be accepted until December 15, 1947. *Weekly Letter* National Paint, Varnish and Lacquer Association.

**YOUNGSTOWN SHEET TUBE TO
MANUFACTURE HI-STEEL**

Youngstown Sheet & Tube Co., Youngstown, O., has been licensed by the Inland Steel Co. to manufacture "Hi-Steel", a low alloy structural steel that is said to permit lighter weight construction without sacrifice of strength or safety.

The steel is being used extensively by railroads and is said to be coming into broad use in the automobile industry for stress parts. It is also being used in bull dozers, structural framework, ships, trailers and other products demanding light weight, high strength, and greater resistance to impact, fatigue, abrasion and corrosion. According to the manufacturer it can be cut, punched, reamed, formed and otherwise fabricated with little or no deviation from standard practices, and is easily welded by arc, spot, resistance or flash methods.

Normally, the yield point of "Hi-Steel" is approximately 55,000 lbs. per square inch. One of the features claimed for it is that its yield can be increased up as high as 85,000 pounds or more per square inch by a simple heat treatment.

ROOF SOLVES PARKING PROBLEM

A novel and practical answer to the parking problem that has been bothering the greater Boston area is an "On the Roof" parking area built by Lewis-Shepard Products, Inc., manufacturers of materials handling equipment, located in Watertown, Mass.

The firm's engineers, when drawing up plans for a new addition to the plant, devised the idea of constructing the roof so that it could be used as a parking area. The building is so located that the roof is only three feet above an adjacent street level which is reached via an abbreviated ramp. A low cement safety rail encompasses the parking area which will accommodate 75 to 80 cars.

(Please turn to page 260)



The improved, better cutting NEW GRIFFIN is a general-purpose hand frame blade of original type—made only by Griffin. Through the center its temper is soft, but very tough; back and teeth hard. Thus it combines great flexibility with extreme toughness. Your best buy in a hand blade.

OTHER GRIFFIN BEST BUYS

For most economical production machine sawing pick the long-lasting GRIFFIN SPECIAL ALLOY molybdenum high

speed steel blade . . . For cutting hard alloys, pick the GRIFFIN HIGH SPEED STEEL blade of 18-4-1 tungsten . . . For hand sawing thin sheet, tubing, conduit, etc. without tooth breakage, the GRIFFIN NON-STRIP . . . For precision contour sawing, a GRIFFIN BAND SAW, made in four metal- and wood-cutting types.

Get full information in the new 20-page Griffin price list. Write for your copy.

JOHN H. GRAHAM & CO., Inc.

General Sales Agent
Dept. C, 105 Duane St., New York 8, N. Y.

ASK YOUR DISTRIBUTOR FOR

• GRIFFIN •

HACK SAW BLADES AND BAND SAWS

Made by G. W. GRIFFIN CO., Franklin, N. H., Hack and Coping Saw Blade Specialists since 1880

SHIELD BRAND Performance

IN THE RAILWAY INDUSTRY

Since 1881 a majority of all the railways in the United States have been regular users of Standard Shield Brand Tools.

IN THE FARM IMPLEMENT INDUSTRY

Since 1881 principal makers of all classes of farm implements have regularly specified and used Standard Shield Brand Tools.

IN THE ELECTRICAL INDUSTRY

The major manufacturers of electrical equipment are now and for over 50 years have been regular users of Standard Shield Brand Tools.

IN THE AUTOMOTIVE INDUSTRY

For production work, major manufacturers of cars, trucks, busses and parts have for 40 years specified and used Standard Shield Brand Tools.

IN THE HOME APPLIANCE INDUSTRY

The well known makers of stoves, refrigerators, sweepers and a host of other home appliances are regular users of Standard Shield Brand Tools.

IN THE AVIATION INDUSTRY

Aeroplane and parts makers have all used Standard Shield Brand Tools in the largest quantities available since the industry became a mass production operation.

In conclusion—we believe this Record of Performance in America's mass production industries is a stronger endorsement of the Service Value of Standard Shield Brand Drills, Reamers, Taps, Dies and Special Tools than isolated examples of spectacular performance. Your Mill Supply Distributor can furnish your requirements of Standard Shield Brand Drills, Reamers, Taps, Dies, Milling Cutters and Special Tools.



THE STANDARD TOOL CO.

CLEVELAND

Warehouses: New York • Detroit • Chicago



THE BRAND

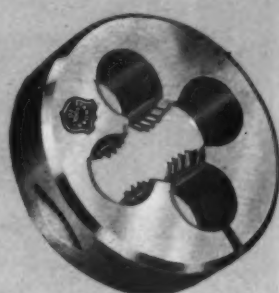
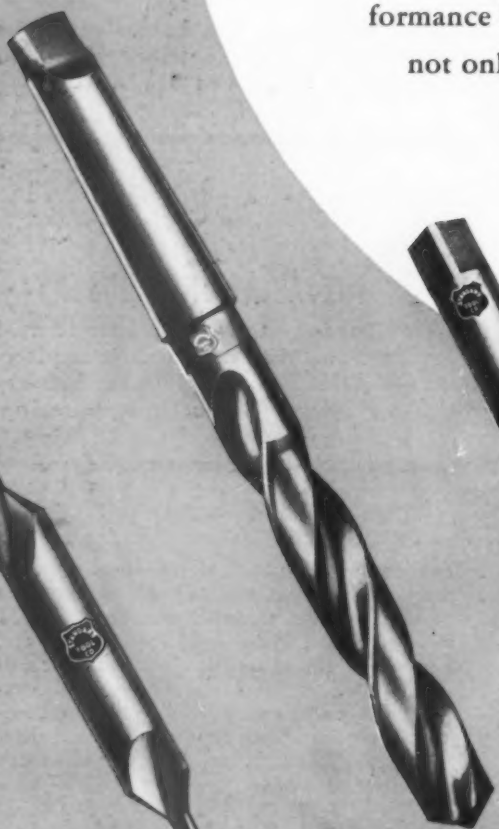
**that permits you to STANDARDIZE
and thus ECONOMIZE**

Standard Shield Brand Tools are made in these classes: Drills, Reamers, Taps, Dies, Milling Cutters and Special Tools.

All these Shield Brand Tools are produced in one factory, under one management, to one standard of quality.

By standardizing on Standard Shield Brand Tools you get uniform performance in each metal cutting operation. Economy results not only in uniformly high output, but in time saved in purchasing, stockkeeping and tool crib operation.

Mill Supply Distributors coast to coast can furnish your requirements.



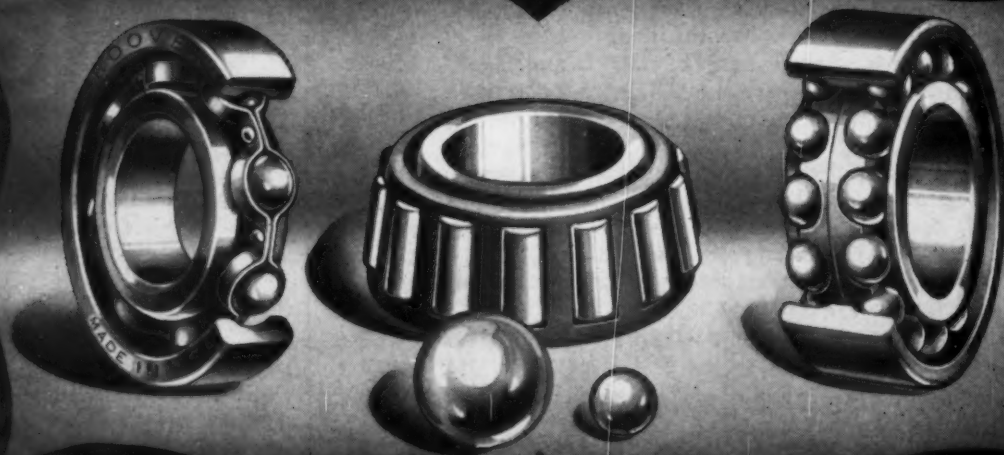
THE STANDARD TOOL Co.

CLEVELAND

Warehouses: New York • Detroit • Chicago

The Aristocrat  *of Bearings*

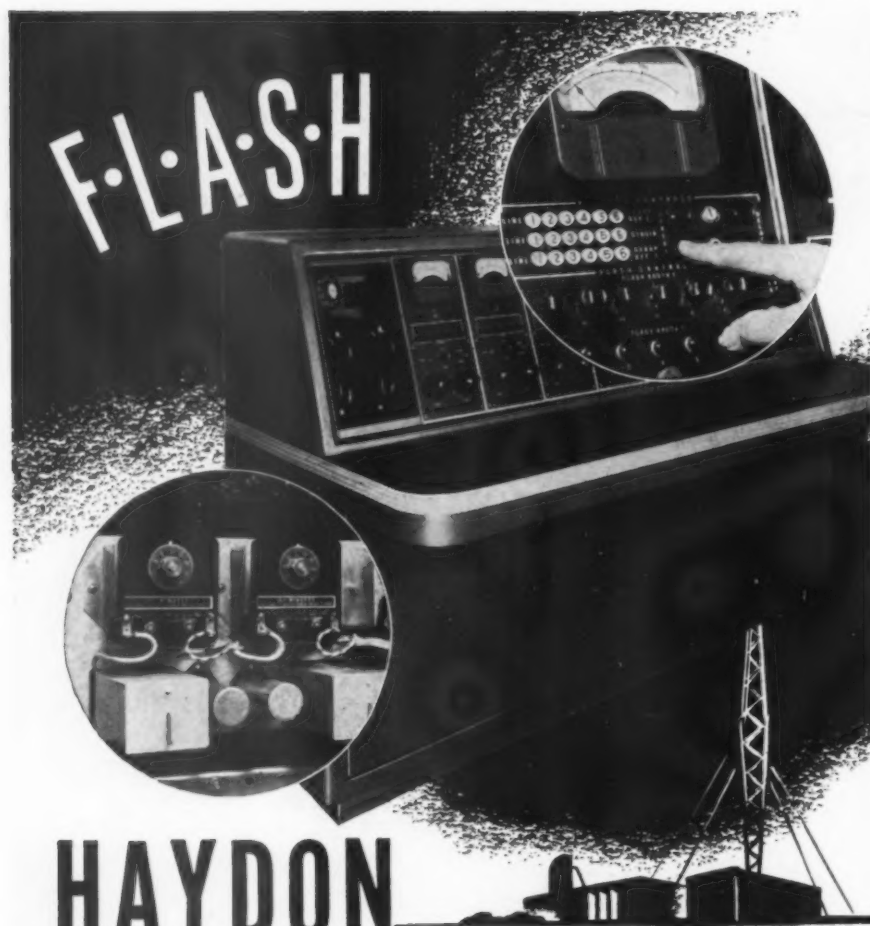
**FOR PRODUCTS WITH SUCH
HIGH STANDARDS *that* THEIR MAKERS
CAN AFFORD TO USE ONLY
THE FINEST BEARINGS**



H O O V E R

The World's Only Ball Bearing with Honed Raceways

HOOVER BALL AND BEARING COMPANY -- ANN ARBOR, MICHIGAN



HAYDON puts them ON THE AIR

Western Electric uses Haydon Automatic Time Delay Relays to actuate Flash Announce signal circuits in this new relay type Program Dispatching Unit for radio broadcasting.

Operating efficiency is the keynote of this Dispatching Unit, enabling the master control operating staff to handle successive multiple switching operations on a split second basis with speed and accuracy.

Switching functions scheduled to occur simultaneously are preset before hand and a Haydon Interval Timer, adjustable over a 60 second interval, operates delayed circuit switching, enabling the operator to spread out his starting of these functions.

This and many other Haydon applications are accounting for greater timing accuracies throughout industry. If it's about time, write for free descriptive engineering catalog featuring Haydon timing motors and devices.

WRITE HAYDON, 2200 ELM STREET, TORRINGTON, CONNECTICUT

HAYDON

MANUFACTURING COMPANY, INC.

TORRINGTON

CONNECTICUT

HARNESS TIME TO

YOUR PRODUCTS

SUBSIDIARY OF GENERAL TIME INSTRUMENTS CORPORATION

INTRODUCTORY HAND SOAP PACKAGE AVAILABLE

The Mione Manufacturing Company, Collingdale, Pa. manufacturers of hand soap, have announced the availability of a new introductory package for use in plant and office washrooms.

Known as the "Mione Washroom Unit", it consists of an 8-lb can of Mione powdered hand soap (with Lanolin), and a Mione all-metal dispenser. Retail price of the unit is \$3.25. The 8-lb can and the dispenser are packed together in a cardboard container. The unit is available by writing direct to the company.

1 1 1

CUSHIONED CONTAINERS IN CONTINUOUS ROLLS

A new type of packaging medium, which is reported to cut shipping costs drastically, has been announced by Sherman Paper Products Corporation, Newton Upper Falls, Massachusetts. The new product, which will be marketed under the name of Corroflex Tube-Tainer, is described by the manufacturer as "Cushioned Containers in Continuous Rolls".



Packaging with continuous roll container

The Tube-Tainer is manufactured of Corroflex, a flexible-corrugated cushion packaging material which is widely used in packing. Its advantages of saving time, material, shipping weight and cube, are said to be carried still further in the Corroflex Tube-Tainer, a ready-made container in roll form. Originally developed during the war as a sleeve used in packing palletized shipments of artillery shells, continued experiment and research led to the continuous roll feature of the new product.

Corroflex Tube-Tainer is supplied in stock rolls 250 feet long, in a variety of widths. To use it, the packer simply cuts or tears off the correct length from a roll mounted at his bench, inserts the product, and closes the ends. Any standard closure may be used with the Tube-Tainer: taping, tying with either wire or twine, stapling, steel-strapping.

Corroflex Tube-Tainer will be stocked and sold by approximately 200 paper distributors throughout the U. S. In addition to the stock sizes, special widths and lengths can be made to order. Samples and photographic data sheets may be obtained from Sherman Paper Products Corporation, Newton Upper Falls 64, Massachusetts.

(Please turn to page 262)

Before
THIS BROWN DERBY
BECAME FAMOUS



Long before the "man in the Brown Derby" became front page news, General Industries was making molded plastics parts for manufacturers who have since become veteran customers.

In 1924, for example, we molded the first brushholder for the Lamb Electric Company of Kent, Ohio. And we're still making that same part for them today! That's typical of the genuine molding satisfaction General Industries consistently renders to all its customers. They, in turn, know they can rely on this dependability to help them make their products better . . . and keep *their* customers satisfied.

You can permanently solve *your* plastics molding problems, too, with this same dependable GI service. There's a General Industries representative near you . . . ready to consult with you at any time.

THE GENERAL INDUSTRIES CO.
MOLDED PLASTICS PIONEERS

Department PR • Elyria, Ohio

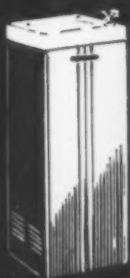
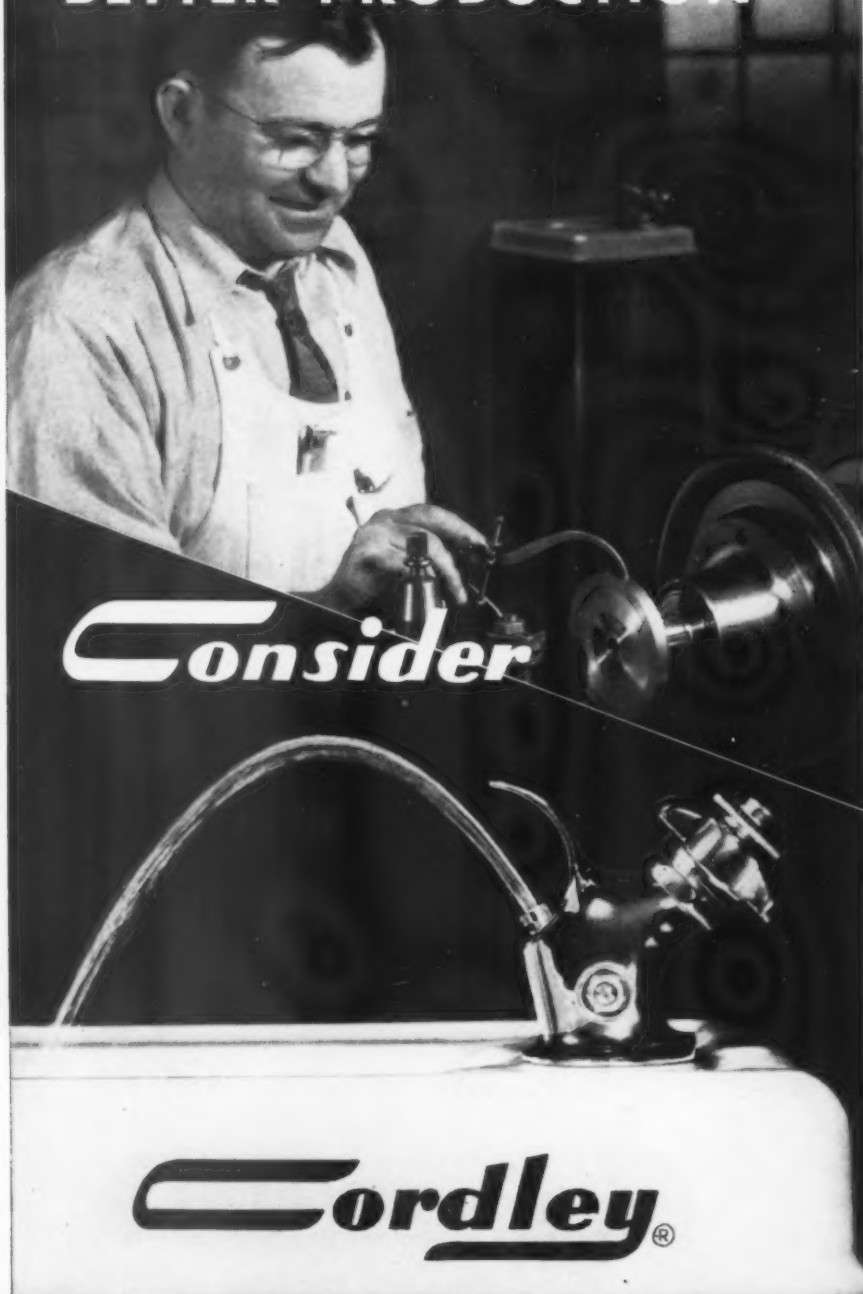
DETROIT: Phone Madison 2146

MARION, IND.: Phone 2566-W

BUFFALO: Phone Grant 8567

CAMDEN: Phone 2215

IF YOU WANT BETTER PRODUCTION—



ELECTRIC WATER COOLERS

Cost per employe per day:
About the price of half
a stick of gum.

CORDLEY & HAYES

443 FOURTH AVE., NEW YORK 16

In Canada: Northern Electric Co., Ltd Crane, Ltd.



QUONSETS NOW AVAILABLE IN NEW 36-FOOT WIDTH

Quonsets are now available in a new 36-foot width, according to the Great Lakes Steel Corporation, Stran-Steel Division, Detroit, Mich., manufacturers of the round-roofed steel structures.

Basic buildings in this width have been added to the Quonset line to meet demands from industrial cities where 40-foot lot frontages are common and from rural areas where 36 feet is the accepted and recommended standard for certain farm structures.

The basic "Quonset 36" unit is 20 feet long. Buildings may have any multiple of that length. Production of Quonsets in 20, 24 and 40-foot widths, and wider multi-arches will continue.

1 1 1

SPECIAL VACUUM PROCESS USED IN CIGAR PACKAGING

Two Tampa cigar makers are now introducing cigars in a key-opening can that preserves the flavor, aroma and moisture content of their products. Known as the "Humipak", the can, and the method of packing by a special vacuum process, are the results of research by the Continental Can Co., Inc., New York, N. Y.



Continental's "Humipak"
packaging for cigars

The process was used successfully in 1941, but the venture was cut short by wartime restrictions on the use of tin plate. Now that the M-81 government can order has been relaxed, Continental has resumed limited manufacture of the cans, in anticipation of a wide demand for Humipak cans as a new package for specialty uses.

Continental's development of the Humipak can is in some respects similar to its development of round refinery sealed motor oil cans in 1933. The company also pioneered in the development of cap-sealed cans for beer.

1 1 1

CARBON MONOXIDE INDICATOR SCHEDULED FOR PRODUCTION

The N.B.S. Carbon Monoxide Indicator, developed and manufactured during the war by the National Bureau of Standards, is said to be capable of "rapid determination of infinitesimal" amounts of carbon dioxide in the air.

The detector is about the size of a pen-
(Please turn to page 264)



YOU'LL GET ALUMINUM

FAST

**FROM YOUR NEARBY
ALCOA DISTRIBUTOR**

Lightning-fast delivery service is the special pride of your Alcoa distributor. He's seldom more than an overnight jump from you.

Use his nearby stock room, and you can carry smaller supplies in your own inventory.

He carries large and complete stocks of Alcoa Aluminum Standard Sheet, Shapes, Rod, Bar, Tubing, and Fastenings. He stands ready to supply them for your economical fabrication.

The name and telephone number of your nearby Alcoa Distributor is in the list at right. Call him the next time you need aluminum in a hurry. ALUMINUM COMPANY OF AMERICA, 1931 Gulf Building, Pittsburgh 19, Pennsylvania.

**MORE PEOPLE WANT
MORE ALUMINUM FOR
MORE USES THAN EVER**

For quick, off-the-shelf shipments,



**PHONE YOUR NEAREST
ALCOA DISTRIBUTOR**

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J. M. Tull Metal & Supply Co., Inc.
Phone: WAlnut 3525

BALTIMORE, MARYLAND
Whitehead Metal Products Co., Inc.
Phone: LAFayette 2300

BUFFALO, NEW YORK
Whitehead Metal Products Co., Inc.
Phone: CLeveland 1475

CAMBRIDGE, MASSACHUSETTS
Whitehead Metal Products Co., Inc.
Phone: TRowbridge 4680

CHICAGO, ILLINOIS
Central Steel & Wire Company
Phone: REPublic 3000

CHICAGO, ILLINOIS
Steel Sales Corporation
Phone: CRAWford 4400

CINCINNATI, OHIO
Williams & Company, Inc.
Phone: CHerry 4700

CLEVELAND, OHIO
Williams & Company, Inc.
Phone: EXpress 7000

COLUMBUS, OHIO
Williams & Company, Inc.
Phone: MAin 3291

DALLAS, TEXAS
Metal Goods Corporation
Phone: DIXon 4-3925

DETROIT, MICHIGAN
Steel Sales Corporation
Phone: TYler 6-3000

HOUSTON, TEXAS
Metal Goods Corporation
Phone: PReston 1181

KANSAS CITY, NORTH, MISSOURI
Metal Goods Corporation
Phone: NOrcley 3516

LOS ANGELES, CALIFORNIA
Pacific Metals Co., Ltd.
Phone: PRospect 0171

NEWARK, NEW JERSEY
Whitehead Metal Products Co., Inc.
Phone: Bielow 3-4200

NEW ORLEANS, LOUISIANA
Metal Goods Corporation
Phone: CAnal 7373

NEW YORK, NEW YORK
Whitehead Metal Products Co., Inc.
Phone: WATkins 9-4900

PHILADELPHIA, PENNSYLVANIA
Edgcomb Steel Company
Phone: GARfield 3-6300

PHILADELPHIA, PENNSYLVANIA
Whitehead Metal Products Co., Inc.
Phone: BAldwin 9-2323

PITTSBURGH, PENNSYLVANIA
Williams & Company, Inc.
Phone: CEdar 8600

PORTLAND, OREGON
Pacific Metal Company
Phone: BRoadway 0695

ST. LOUIS, MISSOURI
Metal Goods Corporation
Phone: GOodfellow 1234

SAN FRANCISCO, CALIFORNIA
Pacific Metals Co., Ltd.
Phones: MIssion 1104 and
ENterprise 10806

SYRACUSE, NEW YORK
Whitehead Metal Products Co., Inc.
Phone: SYracuse 5-4112

TOLEDO, OHIO
Williams & Company, Inc.
Phone: ADams 8102

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**ALCOA FIRST IN
ALUMINUM**

IN EVERY COMMERCIAL FORM



NOW . . . it costs
no more to

USE the modern day

AMAZING



A triumph of Lightfoot laboratory research! Scrubber and soap welded to form a single, integrated, indivisible unit . . . with each particle a complete cleanser in itself. *This exclusive Lightfoot process has already gained acceptance as the greatest advance, in cleansing efficiency and economy, of the last decade!*



**Lightfoot
TREET**

A FINE GRIND SOAP FOR
HEAVY DUTY

Most popular industrial soap made! Efficient, safe, economical — the perfect cleanser for general plant use . . . ideal for women workers.



**Lightfoot
COMMODORE**

A COARSE GRIND SOAP FOR
EXTRA HEAVY DUTY

Same formula as Lightfoot TREET but ground coarser for removing extra heavy incrustations of dirt, grime, grease, oil, etc.

Write for samples to
**LIGHTFOOT SCHULTZ
C O M P A N Y**

663 Fifth Avenue, New York 22
209 South State Street, Chicago 4

(Continued from page 262)

oil and will detect and closely estimate less than 1 part of carbon monoxide per 500 million parts of air, allowing a big safety factor. It is simply operated, air being drawn through a small tube containing chemicals that change color in the presence of carbon monoxide. A matching color chart indicates the concentration. The indicator was used extensively during the war in aircraft, tanks and similar places.

United States Safety Service Co., 1215 McGee St., Kansas City, Mo., has been licensed by the government to manufacture the gels and instrument.

**GRAYBAR NATIONAL DISTRIBUTOR
FOR KOILED KORDS, INC.**

The Whitney Blake Company of New Haven, Conn. has joined the West Coast interests of Ralph Collins and Charles F. Mason in the ownership of Koiled Kords, Inc., successor to Cordage, Inc., according to an announcement made by John Brown Cook, president of the new company.

Simultaneously it was announced that the Graybar Electric Company with offices and warehouses in 96 principal cities, had been appointed exclusive distributor of all Koiled Kord products except telephone retractile cords of which they will share the distribution with several telephone manufacturers.

(Please turn to page 266)

AN UNUSUAL OPPORTUNITY

• The Britex Corporation is seeking a few salesmen for selected territories throughout the United States for their improved liquid cleaner. This all-purpose cleaner makes long lasting pure white suds. It is sold to textile mills, shoe factories, hotels, milk plants, food industries, wholesalers, steel mills, breweries, etc. Ad a fast moving item to your line. Write today. The commission is very liberal. Samples and descriptive material which will fit into your pocket will be furnished.

**BRITEX CORPORATION
MANUFACTURING CHEMISTS**
163 North Beacon Street
Boston 35, Mass.

**What type of
STAINLESS
FASTENER
do you need?**



**Prompt delivery from the
largest stock in the nation!**

Screws . . . nuts . . . washers . . . pins . . . Allmetal carries the largest stock in the country of stainless steel fasteners and screw machine parts. We also have facilities for heading, tapping, drilling, reaming, slotting, turning, stamping, broaching and centerless grinding . . . and we work not only with stainless and monel, but also with duralumin, aluminum, brass, bronze, or any other non-corrosive metal. All parts produced to close tolerances. Write for our catalog today. Allmetal Screw Products Co., Inc., 33 Greene St., New York, 13.

**Send for
FREE CATALOG**



This new, 83-page catalog helps you select the correct size and type of non-corrosive fastening device for any particular job. Includes stock sizes, specials that can be made, engineering data, etc. Make request on company letterhead.

Write to
Department PG

**ALLMETAL
SCREW PRODUCTS CO., INC.**

33 Greene Street, New York 13

**SPECIALISTS in
STAINLESS FASTENERS**



the
name
to
know
in
QUALITY
wrenches

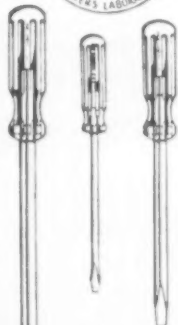
BILLINGS
WRENCHES



Buy Billings from
Industrial Supply Distributors

THE BILLINGS & SPENCER CO.,  HARTFORD 1, CONNECTICUT, U. S. A.

SAFETY has been added to SERVICE in the New VACO line.



173
Types
and Sizes

Management interested in reducing fire hazards as well as in benefiting from the low long term cost of quality tools has found it profitable to investigate the new Vaco screw and nut drivers.

These precision built tools, made only with chrome vanadium bits, are equipped with Vaco Amberyl slo-burning handles . . . shock-proof, break-proof and the only handles of their kind carrying the Underwriters' Laboratories, Inc. Re-examination Service Marker. For full information, write to: Vaco Products Company, 317 E. Ontario St., Chicago.



NEW . . . the Vaco Reversible!



Pull out the blade, turn it around, and the new Vaco Reversible becomes a Phillips instead of a regular screw driver. Saves both time and money!

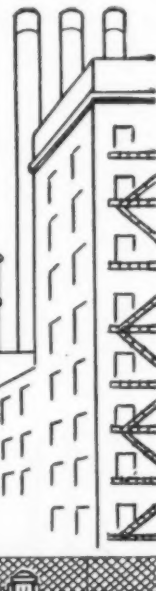
STOP RUST —and at lower cost with RUST-OLEUM

Rust-Oleum is a positive rust preventive. Prepared with scientifically-processed fish oil, it's available in a variety of colors for every industrial use.

Rust-Oleum can be applied directly over rusting metal—by brush, dip or spray. No sand-blasting or chemical "dissolvers" are necessary. Simply wire brush surface to remove dirt, scale, etc.

Rust-Oleum covers 30% more area per gallon . . . goes on 25% faster . . . outlasts ordinary paints two to ten times. This means lower maintenance cost on every job.

Stacks
Tanks
Steel Work
Gutters
Metal Roofs
Steel Sash
Pipes
Fire Escapes
Fences
Fire Hydrants



Ask your distributor
... or write for catalog
and full facts TODAY!

RUST-OLEUM CORPORATION

2439 Oakton Street, Evanston, Illinois

ESTABLISH FIRE SAFETY LABORATORY AT HARTFORD

The Factory Insurance Association, 85 John Street, New York, announces the opening of a Fire Safety Laboratory in Hartford, Conn., which is characterized as being "the most complete assembly of fire protective equipment and facilities to be found anywhere." A profusely illustrated brochure has been published by F. I. A., describing the laboratory facilities, which occupy 8,000 sq. ft. of floor space in the FIA building. These include an automatic sprinkler device display, fire pump installation area, sprinkler, hose stream and extinguisher demonstration area, fire flow meter and miscellaneous equipment area, dust explosion research area, general display area, and classroom to be used for lectures motion pictures, etc.

ACCESSORY AIDS IN HANDLING DRUMS BY FORK TRUCK



Clamping device used on swinging boom to move drum

For safe handling of drums which must be moved singly or in the upright position to prevent spilling, Clark Tructractor, Division of Clark Equipment Co., Battle Creek, Mich., has developed a new clamping device which is readily adapted to any of their fork truck models.

The clamp is self-adjusting for diameters 21½" to 24" and employs a star cam permitting the operator to release the drum without dismounting. Clamping over the chime, the device grips securely throughout transportation and carries up to 700 lbs.

The clamp may also be used on fork trucks equipped with crane, swinging boom, or special extension attachments.

DESCRIBES STEEL SERVICE FACILITIES AT RYERSON LOS ANGELES PLANT

A handsome 12-page booklet recently published by Joseph T. Ryerson & Son, Inc., nationally known steel distributors, gives a quick picture story of the stocks, facilities and personnel at the company's newest plant located in Los Angeles.

Opened for business in October, 1946, the Los Angeles unit is the twelfth in the Ryerson nation-wide group. A copy of the booklet may be secured by writing to Joseph T. Ryerson & Son, Inc., P. O. Box 3817, Terminal Annex Los Angeles 54, California

(Please turn to page 268)

at Illinois Gear

1 Out of every 6 Machines

is used for
**QUALITY
CONTROL**



Left: Checking the accuracy of tooth profile of a spur gear on an involute measuring machine.

Inspecting for pitch line runout and parallelism of a spur gear.

A number of factors, *mechanical* and *human*, coordinate to assure the accuracy of Illinois Gears . . . providing their smooth, quiet operation through long periods of continuous service.

MECHANICAL—Besides the most modern gear cutting, shaping and generating machines, actually every sixth machine is for checking the accuracy of some phase of production. This shop-wide system of inspection not only insures the ultimate in quality, but it pays off as well in lowered costs—passed on to gear users—by detecting and correcting defects before gears get to final inspection.

HUMAN—Skilled inspectors, answerable only to the Quality Control Superintendent, man the inspection and checking facilities throughout our entire plant—rigorous final inspection surpasses even strict wartime requirements. The "1 out of 6" machines include involute profile measuring machines, hob checking machines, gear speeders and Universal Gear Checking machines for controlling the accuracy of pitch line, helix angle, tooth spacing; as well as hardness testers and comparators—Illinois Gears have to be right to get by this "army" of experts—and they are right, as equipment builders the country over will verify. We now offer you the finest Illinois Gear in our history.



Checking accuracy of tooth spacing of a helical gear.

ILLINOIS GEAR & MACHINE COMPANY

CHICAGO 35, ILLINOIS



Blaw-Knox Steel Grating has no acute angles, no bolts, nuts or other fastenings to collect dirt or invite corrosion to unprotected surfaces. Its electroforged construction makes it a one-piece steel "material" of exceptional strength, long life and safety underfoot . . . Various weights for various loads.

1. One-piece electroforged steel construction for guaranteed strength!
2. Easy maintenance—paint reaches entire surface!
3. Maximum open area for light and air!
4. Self-cleaning—no sharp corners to clog with dirt!
5. Economical and easy to install—wherever and whatever your grating needs!

BLAW-KNOX DIVISION of Blaw-Knox Company
Farmers Bank Bldg., Pittsburgh 22, Pa.

BLAW-KNOX ELECTROFORGED **STEEL GRATING**



See for yourself—
Write on your own letterhead for FREE paper-weight-size sample.

ARMSTRONG OFFERS METAL PAN ACOUSTICAL UNIT

A new metal pan acoustical unit for use in buildings requiring a permanently incombustible noise quieting and acoustical treatment has been developed by the Building Materials Division of the Armstrong Cork Co., Lancaster, Pa.

Called Arrestone, the new unit is a perforated metal pan containing a flame-proof paper-wrapped mineral wool sound absorbing pad which is held away from the perforated surface with a metal grid, allowing the entire surface of the pad to absorb noise.

Arrestone pans are 12" x 1 1/4" with a 5/32" bevel on all face edges. This bevel divides the pan into two parts, giving each unit the appearance of two 12" x 12" panels or tiles. Arrestone's noise reduction coefficient is .85. The sound absorbing efficiency is as high as .99 for sounds originating at 512 and 1024 cycles. The mineral wool also provides thermal insulation.



Armstrong's noise-quieting unit

The metal pans have a baked-on enamel surface, can be washed with a lather of any mild soap, and can be repainted with any standard paint without affecting the acoustical efficiency.

The pans snap firmly onto rigid steel "T-runners", and can be removed and remounted without difficulty. Arrestone weighs 2 lbs. per square foot, making it suitable for suspended installation to conceal piping, air conditioning ducts, and lighting fixtures.

1 1 1

FEDERATED METALS HOST TO PURDUE STUDENTS

Further fostering the interest of educational groups in the technology and development of non-ferrous metals, the Whiting, Indiana plant of the Federated Metals Division, American Smelting and Refining Company, was host recently to a group of engineering students from Purdue University.

It was the second occasion in recent months that Federated Metals Division has afforded a practical on-the-spot tour of a non-ferrous metals plant. Professor I. N. Goff of the university was in charge of the group, and A. S. Wigle, plant superintendent, was host for the company.

The vastly expanded metallurgical production processes in making the ingot of brass, bronze, and of the manufacture of solder type metal, babbitt, die casting alloys and lead base alloys were the focal point of interest to the young engineers.

(Please turn to page 270)



VEEDER-ROOT INCORPORATED, HARTFORD 2, CONNECTICUT

COUNTING DEVICES

*Yours
for the Asking...*

NEW BOOK on "VEEDER READINGS" . . .
just off the press! 12 pages of Quick Information on VEEDER-ROOT COUNTROL . . . and how and where to use it to top advantage. Write for your copy to: Dept. 687.

VEEDER-ROOT INC., HARTFORD 2, CONN.

Visit Veeder-Root at the Machine Tool Show - - Booth 42



Every user of Udyllite equipment and supplies knows that there is an experienced Udyllite plating engineer always ready to help him correct plating difficulties and improve practice. Udyllite has the know-how of plating experience with every type of installation.

Udyllite also maintains a pilot plating plant in which a user's particular problem is solved without interfering with his regular production schedules.

These services, in combination with Udyllite's ample stocks of platers' supplies, provide *plus* values which only an organization like Udyllite can furnish

Udyllite

THE UDYLITE CORPORATION

DETROIT 11, MICHIGAN

REPRESENTED IN PRINCIPAL CITIES

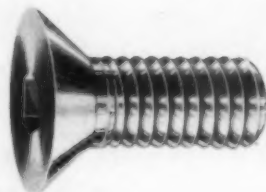
SOLVAY ISSUES BULLETIN ON ANALYZING WATERS

A new 100-page technical bulletin on the analysis of industrial and municipal waters has been announced by the Solvay Sales Corporation. Designed to present methods suitable for rapid work without undue sacrifice in accuracy, the book contains sections on mineral analysis, stationary boiler water analysis, municipal and railroad water supplies, swimming pools and pollution.

It also gives information on reagents, indicators and standard solutions, conversion tables, a four page index and a list of atomic weights. Copies may be obtained without charge by writing to Solvay Sales Corporation, Advertising and Sales Promotion Department, 40 Rector St., New York 6, N. Y., requesting Solvay Technical and Engineering Service Bulletin No. 11 "Water Analysis".

1 1 1

FLAT HEAD SOCKET CAP SCREWS ADDED TO HOLO-KROME LINE



New Holo-Krome flat head socket cap screw

The Holo-Krome Screw Corp., Hartford, Conn., have added a new item to their line of socket screw products, flat head socket cap screws. The screws are made from special analysis alloy steel, and all portions of the screw, threads excepted, are completely cold forged by the Holo-Krome patented method. The entire Holo-Krome line will be exhibited at the Machine Tool Show in Chicago, September 17-26.

1 1 1

NEW LUBRICATING GREASE

Lead-Lube is the name of new lubricating grease for use on all open gears and bearings, developed by Knapp Mills Inc., 121 Broad St., New York, N. Y. It is a mixture of extremely fine metallic lead powder and high grade lubricating grease. The manufacturer states that after a period of use, Lead-Lube forms a coating of metallic lead over all gear and bearing surfaces, and that when this coating is formed the requirements for additional grease will have been reduced to a minimum. The lead coating fills score marks, pits, grooves or other imperfections, and the coating which is renewed by occasional applications of the mixture, reduces shock and noise, and eliminates uneven wear.

It is recommended for open gears and bearings in ball mills, hoists, pumps, kilns, rolling mills, dredging equipment, chain drives, and so on.

(Please turn to page 272)

Things you can depend on...

● When your maintenance men ask for dependable, long-wearing brushes, it's time to call in a Pittsburgh Brush representative.

Year after year, Pittsburgh Brushes have proved their quality and economy in hundreds of industries. And when you standardize on Pittsburgh, you're sure of the same high quality—the same efficient brush—for a given job, whether the order is placed in Philadelphia or San Francisco.

You can depend on Pittsburgh service, too—for 144 Pittsburgh branches are strategically located—one near you—to serve your needs without delay. Ask our experts to help you select the right brushes for each of your requirements.

THE TIDE



and BRUSHES by Pittsburgh



PRODUCTION AND MAINTENANCE BRUSHES, TOO

● "Pittsburgh" also manufactures a full line of Industrial Brushes—including Floor Sweeps, Mill Dusters, and Wire Scratch Brushes. Our engineers will be glad to work with you in developing "Even Trim" Spiral Wound brushes of wire, horsehair or tampico to meet your own special finishing requirements.

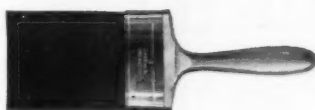
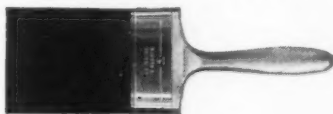
BRUSHES by PITTSBURGH—a Complete Line for Every Industrial Use

THREE FAMILIES

Pittsburgh's 100% Pure Bristle. No finer brush made today.

Pittsburgh's exclusive Bristle-Neocota. Top quality performance. Costs about 1/3 less.

Pittsburgh's 100% Neocota. Costs about half as much as pure bristle, yet gives excellent performance and has special advantages, such as high resistance to water.



AND

**AS SOON AS
POSSIBLE
Gold
Stripe**

the supreme quality brush
for every painting need.

PITTSBURGH

PLATE GLASS COMPANY

Brush Division

THE KNURLED CUP POINT DOES IT . . .

MAKES THE



Reg. U. S. Pat. Off.



SOCKET SET SCREW a Self-Locker

And that knurled cup point digs-in and "stays dug"—regardless of the most chattering vibration . . . yet, the "Unbrako" Self-Locker can be backed-out and used over again and again! "Unbrako" and "Hallowell" Products are sold entirely through Industrial Distributors.

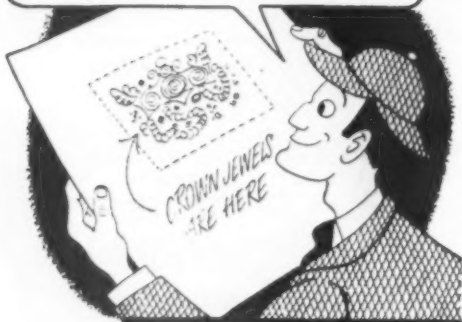
OVER 44 YEARS IN BUSINESS

Knurling of Socket
Screws originated with
"Unbrako" in 1934.

STANDARD PRESSED STEEL CO.

JENKINTOWN, PENNA. BOX 590 • BRANCHES BOSTON • CHICAGO • DETROIT • INDIANAPOLIS • ST. LOUIS • SAN FRANCISCO

NO WONDER I COULD SEE
RIGHT THROUGH THEIR PLANS
THEY'RE ON PEL-X! . . .
THE BETTER TRACING CLOTH



Naturally you want a tracing cloth that's truly transparent—for greater speed, accuracy and minimum eyestrain. That's why you'll just naturally want to use PEL-X Tracing Cloth all the time, once you try it.

But Transparency isn't the only reason for the popularity of this tracing cloth. It also gives you maximum erasability with minimum feathering. Why not try PEL-X—now, today? PEL-X, water-repellent, white pencil tracing cloth is at your dealer's now.

TRANSPARENT

WITH A CAPITAL "T" FOR TRULY

FOR BETTER PLANS . . . Better Plan on PEL-X Tracing Cloth

Current Holliston Production includes: TRACING CLOTHS, COATED and IMPREGNATED FABRICS, INSULATING CLOTH BASE, SEPARATOR CLOTHS, MAP CLOTH, PHOTO CLOTH, REINFORCING FABRICS, SIGN LABEL and TAG CLOTHS, BOOKBINDING CLOTHS, SHADE CLOTH.



THE HOLLISTON MILLS, INC. Norwood, Mass. CHICAGO • NEW YORK

NEW ATOMIC ENERGY FACILITY TO BE OPERATED BY MONSANTO

The Atomic Energy Commission and the Monsanto Chemical Company have released for publication an architect's drawing showing how the new atomic energy installation at Miamisburg, O., will appear upon completion early next year. Monsanto will operate the new laboratory for the AEC, and will engage in the investigation of basic chemical problems in the field of atomic energy.

The facility is to be called Unit No. 5 of Monsanto's Chemical Research Department. Company personnel, numbering approximately 450, will conduct fundamental chemical studies in the nuclear sciences, and will develop and test processes, procedures and techniques which will be applied to the operation of the nation's atomic energy program.

1 1 1

STERLING BOLT ISSUES NEW DISCOUNT CALCULATOR



Sterling's discount calculator

A new discount calculator, including both base and supplemental chain discounts, has been made available to purchasing agents by the Sterling Bolt Company.

The calculator, made of heavy cardboard, and operating on a slide rule principle, includes base discounts from 0% to 90% in 1/2° steps. The device is useful for buyers of bolts, nuts and screws, and can be obtained by purchasing agents and bolt and nut buyers on application to the sales manager of Sterling Bolt Company, 209 West Jackson Blvd., Chicago 6, Ill., on a company letterhead giving full name, address, and position in the company.

1 1 1

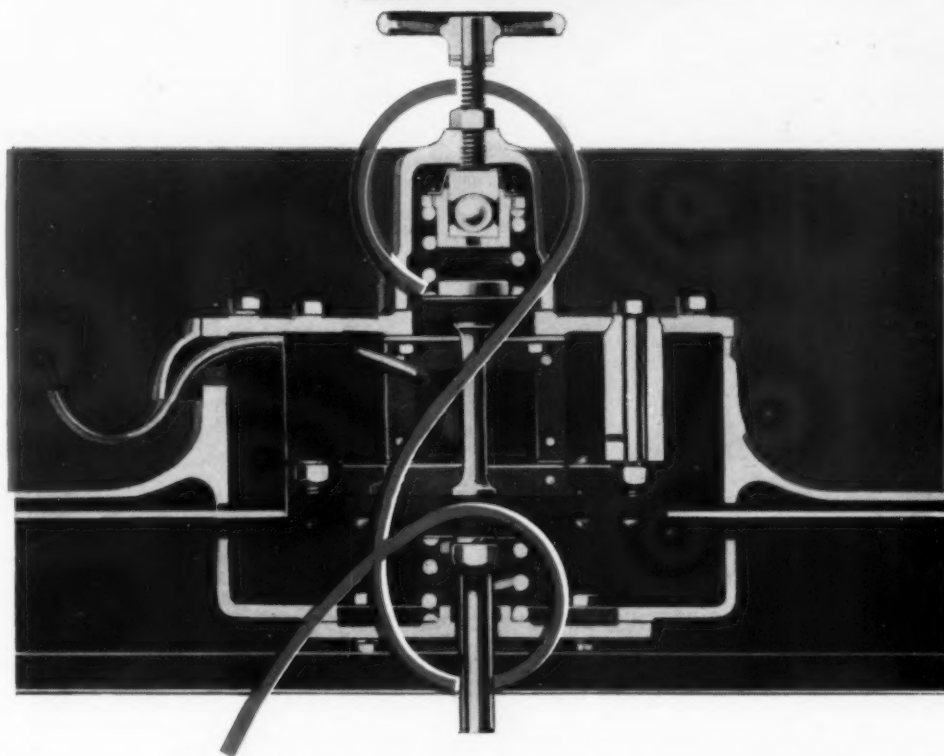
3-TON PROPELLER SHAFT SLEEVE MAKES RECORD AIR SHIPMENT

Delivery of a centrifugally cast 3-ton propeller shaft sleeve from the Shenango-Penn Mold Co. Dover, O. to the Todds Shipyard Corp. in Brooklyn, N. Y. three days after receipt of the order is a recent instance of unusual cooperation between truckers, an airline, and the manufacturer.

Urgently needed for installation in a class C-3 cargo vessel, the 3-ton bronze (Please turn to page 274)

YEAR IN-YEAR OUT

1800 to 3600 Vibrations a minute!



The HUM-MER SCREEN, made by the W. S. Tyler Company of Cleveland, Ohio, successfully screens everything from explosives to women's face powder. Its screen mechanism vibrates 30 to 60 times a second. Two of the important springs in this machine are U.S.S. American Quality Springs... and even under this severe punishment, they last years without replacement.

That calls for quality springs!

● 1800 to 3600 vibrations a minute is a real test for any spring. Yet in the electrically vibrated mechanism of this screening machine, U.S.S. American Quality Springs last years without replacement!

Under equally severe conditions, precision-made American Springs manufactured to close tolerances are giving faithful, economical performance in hundreds of other applications.

These springs are constantly being improved to keep pace with the increasingly severe de-

mands made on them by today's machine developments. Our staff keeps abreast of all metallurgical advances, of every improvement in spring steel... and incorporates them without delay in U.S.S. American Spring design.

Bring your spring problem to us, whether you buy your springs ready-made or make them yourself. Our experts will see to it that you are supplied either with exactly the right springs for your job, or with the best spring wire obtainable for making your own springs.

AMERICAN STEEL & WIRE COMPANY

Cleveland, Chicago and New York

*Columbia Steel Company, San Francisco,
Pacific Coast Distributors*

*Tennessee Coal, Iron & Railroad Company, Birmingham,
Southern Distributors*

United States Steel Export Company, New York

UNITED STATES STEEL



U.S.S. American Quality Springs



**Thunderous energy of JATO rocket charges
tamed by Aerojet Engineering Corporation and a
Bauer & Black Technical Consultant**

PROBLEM: JATO (Jet-Assisted Take-Off) rocket motors reduce take-off distances as much as 50%. The AAF recently specified JATO for all Lockheed P-80 jet fighters (see photo). JATO charges consist of a pitch-coated charge and a steel shell. But tremendous initial thrust tended to rip the charge loose. There was thus a threefold problem: 1) to make the charge burn evenly; 2) to hold it in the shell; 3) to raise the safe storage temperature. A Bauer & Black Technical Consultant and Aerojet engineers provided a workable

SOLUTION: The charge was totally covered with Bauer & Black Industrial Adhesive Tape No. 101 and bound to the fore end of the shell with *Fiberglas-backed tape (No. 263) strong enough to resist a pull of 14,500 pound-seconds—or 18 times the force of gravity!* The new arrangement worked perfectly, and storage temperature range rose from 85°F. to 130°F! Better JATOs have been rolling off the assembly line ever since!

What's your tape problem?

If a pressure-sensitive adhesive tape might improve *your* product, cut costs or speed production, WRITE Dept. 99 today for *free* Technical Consultant Service. Either we *have* your tape or, if to our mutual advantage, we'll *make* it.

Products of

BAUER & BLACK

Division of The Kendall Company, 2500 S. Dearborn St., Chicago 16

Industrial Adhesive Tape

PRESSURE SENSITIVE

Production Short Cuts to Reduce Costs • Research to Speed and Improve Methods

(Continued from page 272)

propeller shaft sleeve was ordered by telephone on a Thursday afternoon. At Shenango-Penn, the necessary foundry mold was completed the same day, and the job was ready for casting by the following afternoon. After cooling, the bronze casting went into the company's lathes Saturday morning for boring and turning and was finished on Sunday afternoon. It was hydrostatically pressure tested, and then received American Bureau of Shipping inspection and approval while still in the plant.

The finished sleeve left the plant by truck on Monday morning and was loaded on a Capital Airlines DC-3 at the Cleveland airport. The fuel load was reduced to compensate for the fact that the weight of the sleeve exceeded the normal cargo load-rating of the plane. Careful shipping weight and space calculations were necessary to fit the load. The sleeve left Cleveland that afternoon, arrived at New York 2 hours and 26 minutes later and was immediately delivered to Todd by truck.

1 1 1

**HIGHER IMPACT STRENGTH DIE
STEELS ANNOUNCED BY LATROBE
ELECTRIC**

The manufacture of Desegatized brands of dispersed segregate die steels, claimed to possess an exceptionally high impact strength, has been begun by Latrobe Electric Steel Company, Latrobe, Pa. Four high carbon, high chrome grades are being produced.

The new line marks the successful application to die steels of Latrobe's process for manufacturing dispersed segregate steels, first introduced in high speed tool metals in 1945.

Grades manufactured are Select B, modified chrome air hardening; G. S. N., high carbon, high chrome oil hardening; Olympic, high carbon, high chrome air hardening; and Cobalt Chrome, special high carbon, high chrome, cobalt air hardening.

In the new die steels an even dispersion of free carbides is achieved in the body of the steel, eliminating grouping together of carbides in a brittle central mass. This quality is claimed to give a more uniform bar, substantially lessened warpage and breaking, and more consistent results under heat treating.

An unusually high impact strength has been established in exhaustive testing, as indicated by the following comparative impact values of samples treated to the most effective usable hardness for maximum working efficiency:

Die Steels	Hardness Desegatized Old Process		Impact Str.
	Rockwell C	ft. pounds	
Select B	62.0	69.5	50.0
G. S. N.	59.5	25.0	22.0
Olympic	60.0	70.0	61.0
Cobalt Chrome	60.0	55.0	44.0

(Please turn to page 278)

Very Popular PROTECTION...



NEW Ful-Vue Acetate Goggles with Side Shields

CLEAR LENSES — For protection against foreign particles on operations such as chemical and physical lab work, chipping, grinding, riveting, machine and hand tool work, spot welding, bottling.

CALOBAR LENSES — When above operations also involve danger from glare, heat, ultra-violet and infra-red radiations. Also for welders' helpers and others adjacent to welding operations, railroad workers, truck and bus drivers, etc.

Pleasant to wear . . . pleasing to look at and offering maximum protection—that's the new AO Ful-Vue Acetate Goggle. In chemical and electrical work and operations where the tiniest spark may cause fire or explosion, these goggles are literally worth their comfortable, light weight in gold.

Features include side shields, if desired, for protection against particles striking laterally . . . shield ventilated to minimize fogging of lenses . . . Ful-Vue lenses that conform to eye orbit . . . no hinges and temples in line of vision. Comfort benefits are nose pads which distribute goggle weight evenly, and the face-formed new bridge. Your nearest AO Safety Representative can supply you with this popular goggle with clear or Calobar lenses.

*** RECOMMENDED USES:**

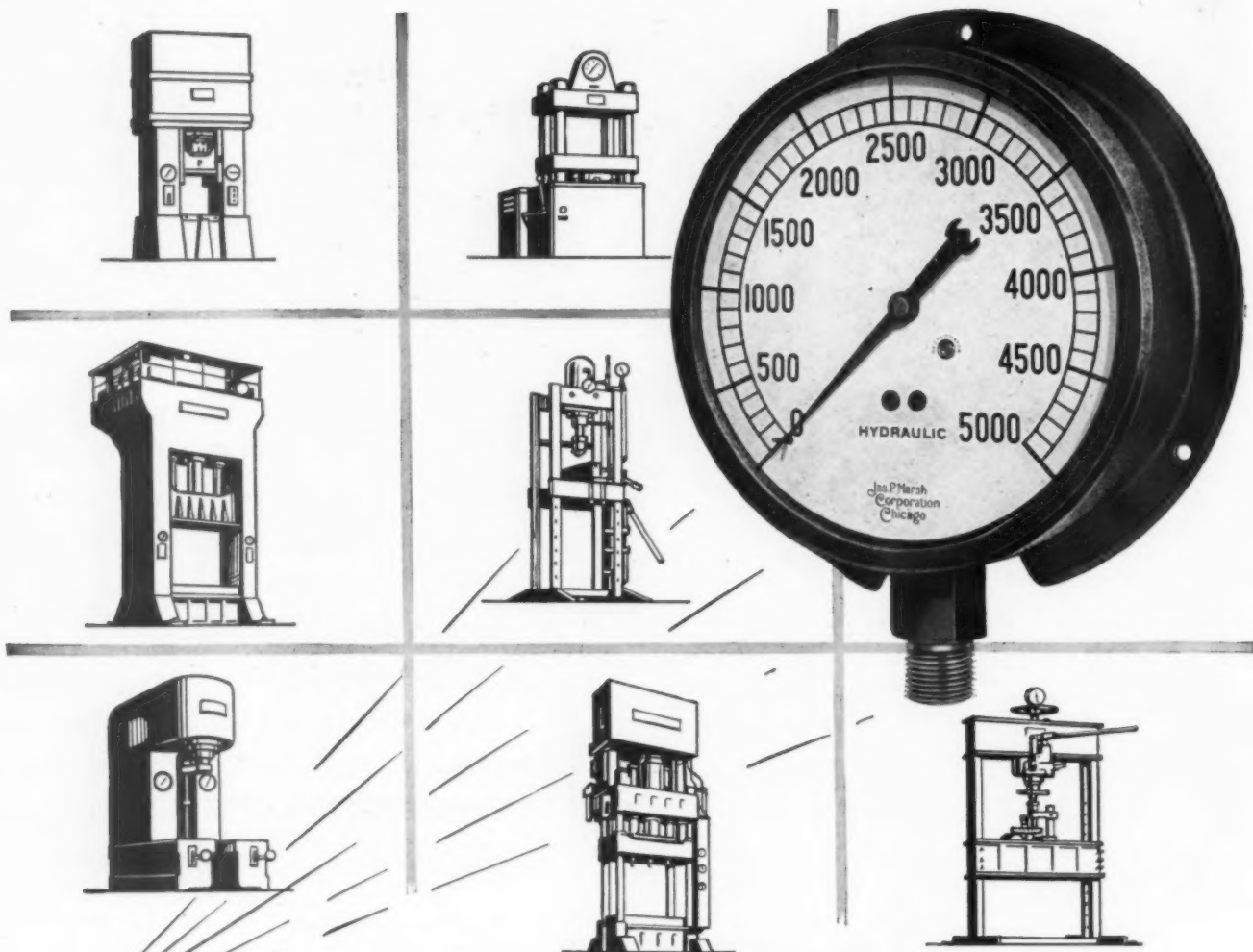


Safety Division

American  Optical

COMPANY

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES



**MARSH ALONE HAS
THE "RECALIBRATOR"**

—quickest and best way to correct a gauge that has been knocked out of adjustment by improper handling.

PREFERRED!

*... by 59 leading makers
of hydraulic machinery*

Hydraulic service imposes extra-heavy demands on pressure gauges. Applied to hydraulic machinery, gauges must be extremely accurate, yet sufficiently rugged to stand up under the high pressures and unpredictable shocks which characterize hydraulic operation.

As a result, manufacturers in this field are highly critical in selecting gauges. So there could be no more impressive tribute to Marsh quality and stamina than the preference accorded Marsh Gauges in this particularly difficult field.

Here is a field in which firms are large in size, but small in number; yet Marsh Gauges are currently used by 59 leading manufacturers whose output, conservatively estimated, represents a substantial majority of the nation's production of hydraulic machinery. The products include every type of equipment—testing, lifting, forging, forming, broaching and forcing presses applying pressures up to thousands of tons.

Yes, the designers of hydraulic equipment have recognized in Marsh Gauges the same combination of qualities that they have so well mastered in their own equipment—the combination of accuracy and stamina. A significant tribute, this, but merely one more example of the preference accorded Marsh Gauges, in many fields.*

For your pressure gauge needs, why settle for less than the instruments preferred by the most critical users of pressure gauges?

JAS. P. MARSH CORPORATION

2035 Southport Ave., Chicago 14, Ill.

Export Dept.: 155 E. 44th St., New York 17, N. Y.

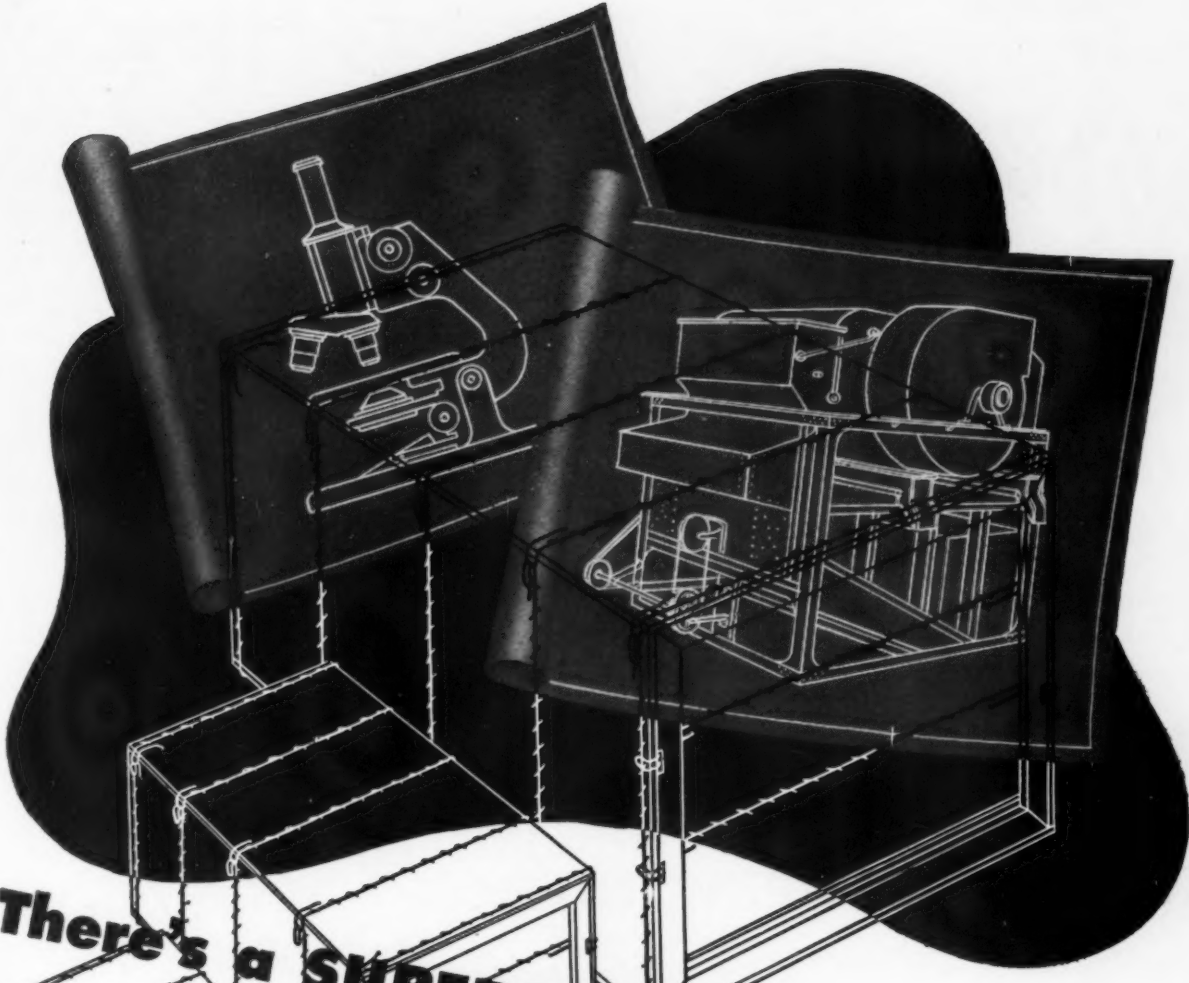
Jas. P. Marsh products include: A full line and range of gauges in pressure, compound, altitude, hydraulic, sprinkler, ammonia, ounce-graduated retard, test, and diaphragm types. Dial thermometers in rigid stem and remote reading types. A broad line of steam and hot water heating specialties. Ask for literature.

MARSH GAUGES

"THE STANDARD

OF ACCURACY"

*Subsequent advertisements will cite additional examples of this.




There's a SUPERSTRONG built for you

You don't have to ask if there is a SUPERSTRONG box or crate for your product—you just know there is!

SUPERSTRONGS, you see, do not come in a few standard shapes and sizes. Our engineering department makes a study of the requirements of your product—and then designs a shipping container custom-built to those requirements.

Your good product deserves a good container. SUPERSTRONGS—"Bound with Steel"—are just the thing.



RATHBORNE, HAIR AND RIDGWAY COMPANY

1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

Wipe Out

OVERLOOKED EXPENSE ITEMS with

"KEX" INDUSTRIAL WIPING TOWELS

IN THESE DAYS when it is so necessary to keep operating costs at a minimum, it may be well for you to look into your small expense items that may have been overlooked.

Is "price buying" of scrap rags and waste really wasting money in scratched surfaces on expensive, highly sensitive machinery?

One way to reduce such unnecessary cost is to use KEX National Service from your local authorized distributor. KEX Industrial Wiping Towels are brought to you on regular schedules in any quantity, as you need them.

KEX Industrial Wiping Towels are uniform in size and made from new, soft textured fabrics woven to specification for Industrial use. Edges are bound to eliminate fraying and catching onto machinery. KEX towels are made for wiping. They are not discarded fabrics that have served their purpose in some other capacity. There are no hard seams, no forgotten buttons to mar delicate, sensitive surfaces.

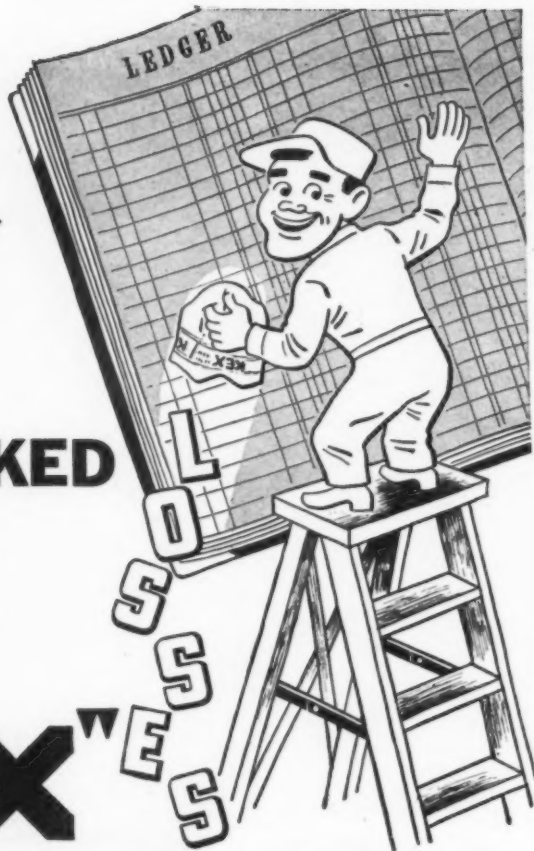


Rent Kex Industrial Wiping Towels and Watch Costs Go Down. Nothing to buy—no expensive inventory—just a low monthly rental. The first month you use this service should show a decided saving on wiping costs.

For complete information, see your classified Telephone Directory for nearest KEX distributor, or write KEX National Service, 295 Fifth Avenue, New York 16, New York.

"KEX" NATIONAL SERVICE

REG. U.S. PAT. OFF.



HIGH STYRENE-LOW BUTADIENE COPOLYMER AVAILABLE

A high styrene-low butadiene copolymer called Good-rite Resin 50 is announced by B. F. Goodrich Chemical Company. Available in commercial production quantities, this new material was specifically developed for use as a stiffening agent in the manufacture of synthetic shoe soles. Laboratory tests now indicate that the resin is particularly well adapted for such other applications as electrical insulation, protective coatings and for molded items such as injection molded appliance plugs.

1 1 1

RAYBESTOS-MANHATTAN MAKES WORLD'S LARGEST BRAKE LINING

The largest brake lining ever made is now being manufactured by Raybestos Manhattan, Inc., Passaic, New Jersey, for use in Europe on the hoists of rehabilitated mines destroyed during the war.

In order to accommodate the huge blocks, an out-rigging extension was designed and constructed by Raybestos-Manhattan for the boring mill table used for the finishing operation. A single piece of the brake lining measures 30 in. long, 24 in. wide and 5 in. thick. The weight of a single block is almost 300 pounds. The enormity of this installation is indicated by the hoist brake drums being about 22 feet diameter.

1 1 1

INTRODUCE METALLIC SHEATHED GRINDING WHEEL

A metallic sheathed, grinding wheel has just been announced by Chicago Wheel & Manufacturing Co., Chicago, Ill. While the wheel itself is of the vitrified or ceramic bond, certain basic improvements have been incorporated into the bond which, when coupled with the metallic sheathing, provide distinct advantages over conventional grinding wheels.

The metallic sheathing is in no way detrimental to efficient grinding, and is said to impart certain distinct advantages. There is a pronounced tendency to dissipate heat generated at the arc of contact over the entire area of the wheel. Heat travels rapidly up the metallic sheathing and is rapidly dissipated. The metallic film in no way affects the truing or dressing of the wheel which is handled in the usual manner. The waterproofing qualities of the metallic film on the sides of the wheel keep the coolant at the arc of contact where it is needed for cooler cutting action and to avoid burning of the work. The makers claim the wheel cuts faster and cooler, with greater tool life between grinds.

A number of different work classifications can be advantageously handled with this new type of metal-sheathed wheel. Included are surface grinding, internal grinding and tool-and-cutter grinding. Substantial savings are claimed on many operations of this type.

The new grinding wheel is named the "Silver Streak." It is available in standard sizes and shapes.



Sterling makes a wide variety of metal fastenings, both standard and special. All metals... all finishes... all sizes.

BOLTS	NUTS
Carriage	Square • Hexagon
Machine	Cold-Punched
Plow	Hot-Pressed
Step	Semi-Finished
Elevator	SCREWS
Lag	Cap • Set
Stove	Machine
	Socket Head

Farm implement manufacture requires a wide variety of metal fastenings and demands a versatile and dependable source of supply. That's why many farm implement manufacturers specify Sterling. They have found that single-source buying from Sterling is not only easier and more economical but assures them of exact-to-specification components *every time*. Sterling quality and dependability will boost production and reduce costs in *your* assembly...whether you make farm machinery, bassinets or bridges. Send your order or inquiry today.

During these times of scarcity, you may find items available in our stocks which would help you through production problems. Inform us of your needs and write for a copy of our current stock list.



STERLING BOLT CO.

201 W. Jackson Blvd., Chicago 6, Ill.
HARRISON 9880

SALES Union Trust Bldg., 17 W. Market St., 161 W. Wisconsin Ave., 1228 N. Hadley St.
OFFICES: Cincinnati 2, Ohio Indianapolis 4, Ind. Milwaukee 3, Wis. St. Louis 6, Missouri

Remington Rand bookkeeping machines

reduce payroll administrative costs

for modern manufacturers

58,000,000 workers in American industry today necessitate streamlined and mechanized payroll accounting for efficient administration. Whatever the size of your organization, deductions for social security, withholding taxes, pension plans or insurance premiums mean that your payroll procedure must be accurate, fast, informational and controlled.

Remington Rand bookkeeping machines provide the special features to solve your payroll problems. Every form you require—payroll register, statement, pay check or envelope, individual earnings record, etc., is prepared at one operation.

Individual, adjustable registers accumulate each deduction separately. Cross computing registers compute and print the net pay automatically. Completely electrified alphabet, numeral and operating keys speed each operation. Checks are numbered, dated and "protected" automatically!

Let your Remington Rand specialist show you how this machine works on your payrolls. Write Adding-Bookkeeping-Calculating Machines Division, Dept. PU, 315 Fourth Avenue, New York 10.



Remington Rand

MACHINES FOR MANAGEMENT



Whatever your size...

200 employees or 20,000 . . . complete electrification and balances computed and printed automatically are just two of the many Remington Rand features to help you eliminate waste effort in your payroll administration—give you extra facts and figures for departmental and management control.

PRODUCTION
EXECUTIVE

Office

Equipment and Supply

Monthly

FORMS FORUM

Highly efficient Purchase Order Form, Requisition,
Inquiry Form, and Acceptance and Rejection
Forms used by The Silex Company

S. J. SNEGAL, Purchasing Agent,
The Silex Company, Hartford,
Conn., makers of glass coffee makers,
Coffee Maker one unit stoves and multi-
unit ranges, and the Electric Steam Iron,
writes that the accompanying purchase
order form was born of experience and
trial and error, and now "embodies every-
thing we require." You will note that it
is "different."


Seven copies of the form are prepared.
The first two are for the vendor, on
white stock, one of which is an "acknowl-
edgement" copy on which the vendor
indicates when shipment will be made.
The third copy on pink stock which
carries form at the bottom for receiving
and price information is for the pur-
chasing department; the fourth on green
stock is for the material control depart-
ment; fifth, on blue stock, with quantity
and price data eliminated is the Re-
ceiving copy; the sixth, yellow stock,
is for Cost Accounting; and the seventh,
which is the follow-up copy is just a
plain tag-board sheet bearing the iden-
tification "Follow-up Copy" and the pur-
chase order number.

Attention is called to the design of
the purchase order, and that of the re-
quisition which is reproduced on the fol-
lowing page.

The information in regard to the ma-
terial being ordered, namely, Quantity,
Our Part Number, Unit-Price, Terms,
Ship Via, and Destination, is in identical
order on each form, thus simplifying the
copying of the requisition onto the pur-
chase order.

On the next page you will also find a
reproduction of the lower part of the
Acknowledgment copy of the purchase
order, which provides space for vendor
to indicate when shipment will be made,
and his acceptance of the order.

(Please turn to page 282)

PURCHASE ORDER		FORM NO. 101																
 The SILEX Company HARTFORD 2, CONNECTICUT		PLEASE SHOW THIS ORDER NUMBER ON ALL INVOICES & PACKING LISTS <table border="1"> <tr> <th colspan="2">PURCHASE ORDER</th> </tr> <tr> <td colspan="2">No. 21071</td> </tr> <tr> <td>DATE</td> <td></td> </tr> <tr> <td>QUANTITY</td> <td></td> </tr> <tr> <td>UNIT PRICE</td> <td></td> </tr> <tr> <td>TERMS</td> <td></td> </tr> <tr> <td>SHIP VIA</td> <td></td> </tr> <tr> <td>DESTINATION</td> <td></td> </tr> </table>	PURCHASE ORDER		No. 21071		DATE		QUANTITY		UNIT PRICE		TERMS		SHIP VIA		DESTINATION	
PURCHASE ORDER																		
No. 21071																		
DATE																		
QUANTITY																		
UNIT PRICE																		
TERMS																		
SHIP VIA																		
DESTINATION																		
PLEASE ENTER OUR ORDER FOR THE FOLLOWING:																		
<table border="1"> <tr><td>QUANTITY</td></tr> <tr><td>OUR PART NUMBER</td></tr> <tr><td>UNIT - PRICE</td></tr> <tr><td>TERMS</td></tr> <tr><td>SHIP VIA</td></tr> <tr><td>DESTINATION</td></tr> </table>	QUANTITY	OUR PART NUMBER	UNIT - PRICE	TERMS	SHIP VIA	DESTINATION	<div style="text-align: center; font-size: 2em;">SPECIMEN</div>											
QUANTITY																		
OUR PART NUMBER																		
UNIT - PRICE																		
TERMS																		
SHIP VIA																		
DESTINATION																		
<table border="1"> <tr> <td> SPECIFIED DELIVERY SCHEDULE </td> <td> PURCHASE MADE FOR / RECEIVING DEPARTMENT DELIVER TO </td> <td> SPECIAL SHIPPING INSTRUCTIONS </td> </tr> </table>			SPECIFIED DELIVERY SCHEDULE	PURCHASE MADE FOR / RECEIVING DEPARTMENT DELIVER TO	SPECIAL SHIPPING INSTRUCTIONS													
SPECIFIED DELIVERY SCHEDULE	PURCHASE MADE FOR / RECEIVING DEPARTMENT DELIVER TO	SPECIAL SHIPPING INSTRUCTIONS																
<p align="center">WE REQUEST THAT YOU SIGN AND RETURN THE ATTACHED ACKNOWLEDGMENT COPY FOR OUR FILES PLEASE!</p> <table border="1"> <tr> <td> <p align="center">TERMS OF PURCHASE</p> <p>Pls. notify us if unable to make delivery as specified. Mail orders on day of shipment. We will return the material subject to our inspection, and if not in accordance with our specifications, or in any way defective, it will be re- turned at your expense, plus any transportation charges paid by us. We reserve the right to return goods to excess of quantity ordered, unless other arrangements have been made. The seller accepts the above conditions by acceptance of this order.</p> </td> <td> <div style="text-align: right;">PURCHASER'S SIGNATURE</div> </td> </tr> </table>			<p align="center">TERMS OF PURCHASE</p> <p>Pls. notify us if unable to make delivery as specified. Mail orders on day of shipment. We will return the material subject to our inspection, and if not in accordance with our specifications, or in any way defective, it will be re- turned at your expense, plus any transportation charges paid by us. We reserve the right to return goods to excess of quantity ordered, unless other arrangements have been made. The seller accepts the above conditions by acceptance of this order.</p>	<div style="text-align: right;">PURCHASER'S SIGNATURE</div>														
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The requisition form, which is also reproduced, closely follows the design of
the purchase order. The sequence of data is identical, making it easy for the
typist to write the order.

(Continued from page 281)

Right:
Lower section of vendor's Acknowledgment copy of purchase order.

ACKNOWLEDGMENT

PURCHASE MADE FOR / RECEIVING DEPARTMENT DELIVER TO: Sillex Co.

SPECIAL SHIPPING INSTRUCTIONS

BALANCE	RECEIVED	DATE	R. O.	INV. DATE	INVOICE VALUE	UNIT PRICE

Right:
Requisition form. The design is similar to that of the purchase order, simplifying preparation of the latter.

SILEX COMPANY
FORM NO. 100 REV. 1-54

DATE OF PURCHASE ORDER	ORDER FROM	PURCHASE ORDER NUMBER
		A 6556
DATE OF REQUISITION	The Sillex Company	
QUANTITY	SPECIMEN	
OUR PART NUMBER	Actual size 8" x 5 1/2"	
UNIT PRICE		
TERMS	DELIVERY SCHEDULE	
SHIP VIA	FOR	SPECIAL INSTRUCTIONS
F. O. B.	DAY, CONTROL, DEPT. USE ONLY	APPROVED FOR PURCHASE

Left:
The Acceptance Report calls for description of materials inspected and accepted.

ACCEPTANCE REPORT No. 133

DESCRIBE MATERIAL INSPECTED AND ACCEPTED:

The Sillex Company

SPECIMEN

Actual size 8" wide by 5"

QUANTITY RECEIVED: _____ NO. OF LOTS RECEIVED: _____

PURCHASE ORDER NO.: _____ VENDOR'S NAME: _____

RECEIVING REPORT NO.: _____ DATE OF RECEIVING REPORT: _____

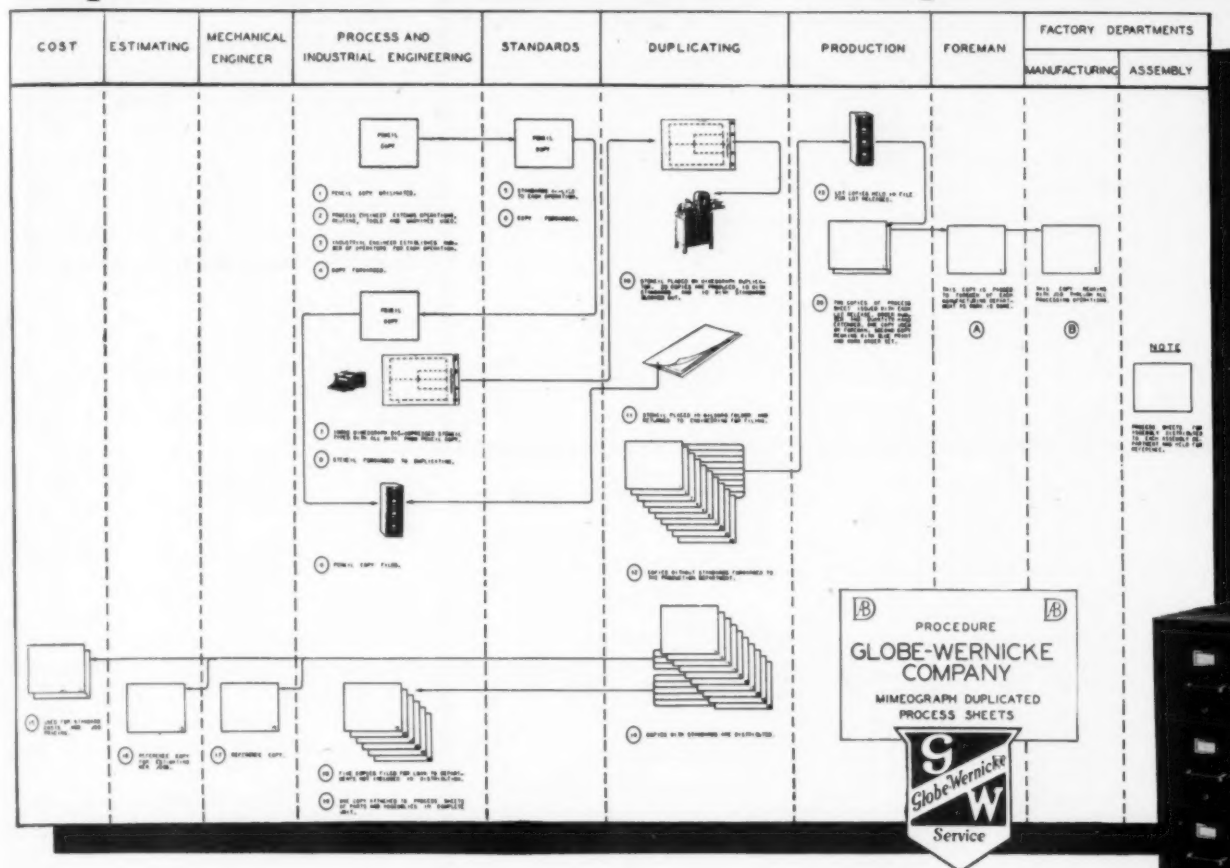
INSPECTOR'S NAME: _____ DATE OF ACCEPTANCE: _____

FORM NO. 100

ORIGINAL

(Please turn to page 284)

Paper Work "Flow Chart" Keys Production



Read how Mimeograph brand duplicator and supplies help cut costs and speed production of paper work for leading office equipment manufacturer

Globe-Wernicke Company, Cincinnati, large manufacturer of office equipment, makes a line of more than 4000 items.

The Globe-Wernicke Company, Cincinnati, makers of office equipment, did a lot of thinking about paper work—and they called in our duplicating experts, too.

The joint results are shown on paper in the flow chart above—which also shows how the operation process and routing standards sheet keys production control for Globe-Wernicke with remarkable savings in the cost of paper work!

Here's why Globe-Wernicke chose the Mimeograph brand duplicator to do the job!

Greater speed of paper work production at far lower cost.

Clear, readable black-and-white copy in non-smudging ink to stand up and stay readable under factory conditions.

Standard form die impressed into Mimeograph brand stencil. All copies identical—whether a hundred, a thousand or more are run. Only one proofreading required.

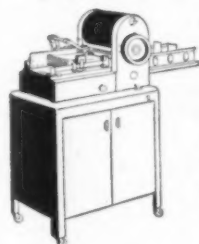
Standards information, required by Cost, Estimating, Mechanical Engineering, Standards, and Process Engineering Departments,

can be blocked out of copies for Production Department where such data is not needed.

Completed stencil with added information can be filed and re-used, as is, or with changes.

It all adds up to a better, more efficient job for a lot less money.

And that is what Mimeograph duplication and our trained duplicating experts have done and are doing for many leaders in many industries. Call the nearest distributor, or write us direct, for help on your specific problems.



FREE! Complete case study of the Globe-Wernicke process sheet problem—including the flow chart reproduced above—plus samples of the finished forms and the Mimeograph brand die-impressed stencil that did the work. It's free! Clip and mail the coupon today.



..... COPYRIGHT 1947, A. B. DICK COMPANY

A. B. DICK COMPANY, P-947
720 West Jackson Boulevard, Chicago 6, Illinois

Send me a copy of your case study of the Globe-Wernicke process sheet problem.

NAME _____

ADDRESS _____

CITY _____ STATE _____

The Mimeograph brand duplicator

is made by

A. B. Dick Company, Chicago

MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office.

REJECTION REPORT		No. 558
PART NO.	PART NAME:	OPER. NO.:
QUANTITY INSPECTED:	QUANTITY REJECTED:	NO. OF LOTS:
DEPT. WHERE REJECTED:	DEPT. RESPONSIBLE:	
REASONS FOR REJECTION	The Silex Company SPECIMEN Actual size 8" wide by 5"	
DISPOSITION RECOMMENDED		
DISPOSITION TAKEN		
REMARKS		
INSPECTOR'S NAME:		DATE INSPECTED:
FORM NO. 042 ORIGINAL		

Rejection Report. It provides complete information as to the why and what of rejection. It is made in quadruplicate.

SPECIMEN	
THE SILEX COMPANY HARTFORD 1, CONN.	
Date _____ 19____	
<div style="border-bottom: 1px solid black; width: 100%;"></div> <div style="border-bottom: 1px solid black; width: 100%;"></div> <div style="border-bottom: 1px solid black; width: 100%;"></div>	
Please reply on this sheet to questions checked below regarding:	
1 Purchase order _____ covering _____	
2 Reply to our letter of _____	
3 When and how did _____ will you ship _____	
4 Our Acknowledgment Form not received. Please return _____	
5 Please insert price on acknowledgment form. _____	
6 Attach bill of lading. _____	
7 Material Received. Please send invoice _____	
8 Will you ship as scheduled on date _____	
9 Fill in Vendor's delivery date on acknowledgment. _____	
10 Remarks: _____	
<div style="border-bottom: 1px solid black; width: 100%;"></div> <div style="border-bottom: 1px solid black; width: 100%;"></div> <div style="border-bottom: 1px solid black; width: 100%;"></div>	
PURCHASING DEPARTMENT	
Signed _____	
<div style="border-bottom: 1px solid black; width: 100%;"></div> <div style="border-bottom: 1px solid black; width: 100%;"></div> <div style="border-bottom: 1px solid black; width: 100%;"></div>	
PLEASE REPLY HERE	
<div style="border-bottom: 1px solid black; width: 100%;"></div> <div style="border-bottom: 1px solid black; width: 100%;"></div> <div style="border-bottom: 1px solid black; width: 100%;"></div>	
Date _____	Signed _____
Form P.D. 1	

The Inquiry Form saves much letter-writing, and provides space at bottom for reply by vendor to the items of inquiry checked. It is printed on letter-size lemon stock.

(Continued from page 282)

The Terms of Purchase, printed on the purchase order, are as follows:

"Notify us if unable to make delivery as specified.

"Mail invoice on day of shipment.

"We will receive the material subject to our inspection, and if not in accordance with our specifications, or in any way defective, it will be returned at your expense plus any transportation charges to us.

"We reserve the right to return goods in excess of quantity order, unless other arrangements have been made. The seller accepts the above conditions by acceptance of this order."

Mr. Snegal states that a change order form, bearing the wording "Supplement to Purchase Order No.——" and "Please make the following change in our Purchase Order", is being printed. This will be similar to the purchase order form, except that it will not be numbered, and will be used for additions, reductions, change in delivery schedule and/or specifications.

Other forms supplied by Mr. Snegal are the inquiry form, requisition (another "different form") which simplifies the writing of purchase orders for it follows a similar form style. Acceptance Report, and Rejection Report.

The requisition is printed on yellow stock; acceptance report is on green stock, and the rejection report is on pink stock.

TIME SAVING IDEA FOR RECORD CARD CONTROL

The Cardesk, manufactured by The Reynolds & Reynolds Company, Dayton, O., is designed to speed record card control systems by providing easy access to all the records all the time. While seated



Cardesk keeps cards within easy reach

at the Cardesk, an operator can quickly reach any of 17,000 or more cards. There is no need to open, close or remove drawers, turn heavy wheels or walk from file to file.

Cardesk is built in three units—a basic desk with a capacity of 10,000 5" x 8" cards, and two optional wings, each with a 3500 card capacity. It accommodates cards of uniform or varying sizes. Dividers and false bottoms can be fitted into any of the compartments to adapt them to records smaller than 5" x 8". Illustration shows all three units assembled.

Good News for all typewriter users!

BULLETIN...FROM THE TYPEWRITER LEADER OF THE WORLD.
NEW YORK—A NEW ALL-ELECTRIC TYPEWRITER IS
NOW AVAILABLE TO BUSINESS ORGANIZATIONS EVERYWHERE.

SUPREME EASE OF OPERATION, LETTERS OF
SURPASSING ATTRACTIVENESS, AND SPEED THAT ONLY
ELECTRIC ENERGY CAN PROVIDE, ATTAIN NEW HIGH
STANDARDS OF TYPEWRITER PERFORMANCE.

COMPLETELY NEW, THE UNDERWOOD ALL-ELECTRIC
IS DESIGNED IN CRISP, CLEAN POSTWAR LINES—TO MAKE
IT THE "WORLD'S MOST BEAUTIFUL TYPEWRITER."

MECHANICALLY, IT IS THE PRODUCT OF THE BEST
OVERALL EXPERIENCE IN TYPEWRITER ENGINEERING AND
DESIGN. MORE THAN FIFTY YEARS' EXPERIENCE IN
MANUFACTURING TYPEWRITERS, PLUS TIME-TRIED
FEATURES OF UNDERWOOD ELECTRIC ACCOUNTING MACHINES
ARE BACK OF THIS LATEST UNDERWOOD PRODUCT.

HERE IS THE LAST WORD IN TYPEWRITER PERFECTION.
BEFORE YOU BUY ANY TYPEWRITER BE SURE TO HAVE
YOUR LOCAL UNDERWOOD REPRESENTATIVE DEMONSTRATE
THE ALL-ELECTRIC FOR YOU.

Copyright 1947 Underwood Corporation



Underwood

All Electric

Typewriter...made by the Typewriter Leader of the World

Underwood Corporation

Typewriters...Accounting Machines
...Adding Machines...Carbon
Paper...Ribbons and other Supplies
One Park Ave., New York 16, N. Y.

Underwood Limited
135 Victoria St., Toronto 1, Canada
Sales and Service Everywhere



Master Track Chart, Grand Central Terminal, New York City.

COLOR PHOTO BY HUGH HAZELRIGG—UNDERWOOD

Finger-Tip Control...with the help of Color!

THE UTILITY OF COLOR can be applied to the successful operation of your business, just as it is applied to the enormous task of moving traffic in and out of Grand Central, swiftly, safely, and on time.

In your business forms, for example, HOWARD BOND's twelve distinctive colors can perform many useful functions. Color-keyed forms speed recognition of units, get to their destination faster, simplify handling and filing.

For letterheads or any business use where color is important or appropriate, HOWARD BOND is an equally effective business tool. See HOWARD BOND samples—in all colors—in *whitest white*—then specify it always.

HOWARD PAPER MILLS, INC. • HOWARD PAPER COMPANY DIVISION, URBANA, OHIO

Howard Bond

"THE NATION'S BUSINESS PAPER"





COLOR PHOTOGRAPH BY LEJAREN Å HILLER—UNDERWOOD

UNIFORMITY Paper can be the basis for uniformly excellent printing—if the paper is MAXWELL OFFSET.

Good printing, after all, is largely a matter of paper's reaction to the printer's tools and skill in reproducing copy. MAXWELL OFFSET's unvarying press performance allows him to *predict* uniformly good results, to demonstrate the full extent of his ability.

Whether you're a printer or a buyer of advertising printing, you'll find it worth your while to investigate the uniform superiority of MAXWELL OFFSET.

HOWARD PAPER MILLS, INCORPORATED
MAXWELL PAPER COMPANY DIVISION • FRANKLIN, OHIO

Maxwell Offset

For uniformity—in finish, in strength, in ink consumption, in whiteness or color conformity

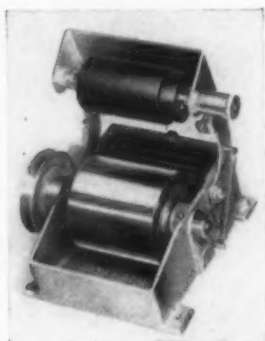
**NEW CATALOG ISSUED
BY C. F. PEASE CO.**

New general catalog, tenth edition, 238 pages, describing the Pease line of blue-printing machines and accessories, white-printing (dry direct process) machines and accessories, sansitized papers and cloths, drafting room furniture and photographic arc lamps, is announced by the C. F. Pease Company, 2601 West Irving Park Road, Chicago, Ill. Equipment described covers a wide range of drafting room needs, and contains more than 150 illustrations.

1 1 1

**NEW INK FOUNTAIN FOR
ELECTRIC ENDORSER**

The Cummins 250 series of endorsing and signing machines is equipped with new ink fountain that is said to provide impressions with a sharpness and clarity usually associated only with professional printing equipment. The fountain is



completely automatic. It is not necessary to wash the rollers. Impressions dry instantly as the ink is formulated to dry by penetration rather than evaporation. The fountain is standard equipment on Model 250 endorsers, check signers, and Model 252 endorsers for attaching to microfilming machines. The fountain is said to insure every impression being identical; also, it permits the incorporation of individual personalized backgrounds in signature plates which are not duplicable by ordinary means. Further information may be obtained from the Cummins Business Machinery Division, 4744 Ravenswood Avenue, Chicago, Ill.

1 1 1

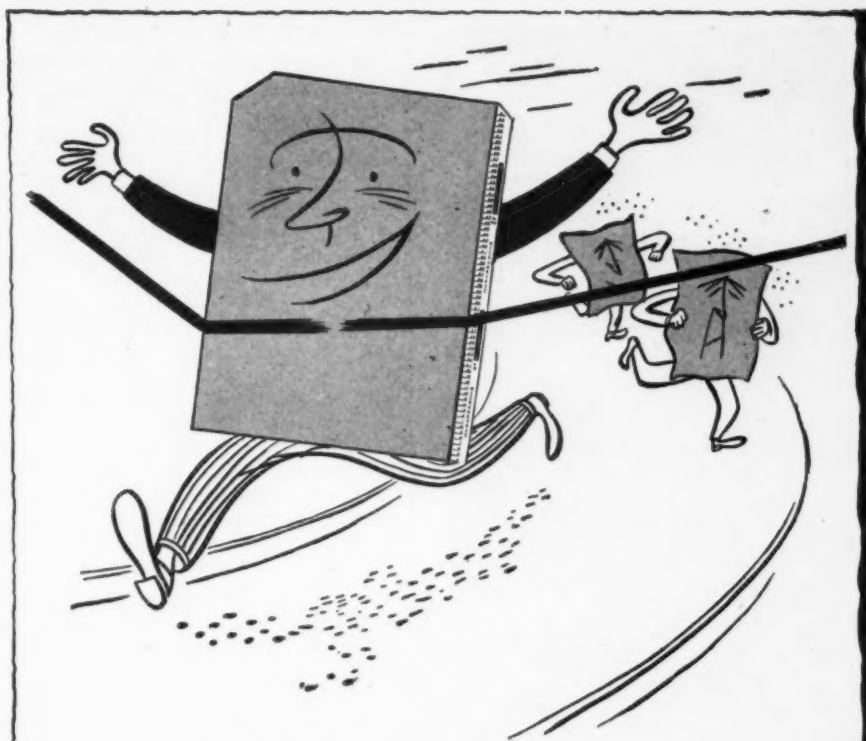
**WIRE RECORDING MACHINE FOR
OFFICE DICTATION**

Magnetic wire recording machine, especially designed for office dictation and transcription, is now being marketed by the Peirce Wire Recorder Corporation, Evanston, Ill.

The machine will record voice sounds made under almost any circumstances, it is claimed, such as desk or telephone conversations, conference proceedings, inventory taking, news reporting, medical or legal recording, etc.

It is a portable unit, and the company states that one machine will serve a small

(Please turn to page 290)



**NOW YOU CAN
PICK THE WINNER**

Competitive selling is here again. That's good news for Purchasing Agents. And Webster, too, welcomes a market where quality counts in the long run.

For picking the winner in the carbon paper field, for example, means choosing Webster's Micrometric. It's the only carbon paper with the scaled edge that makes even spacing on letters and reports *automatically* easier and faster.

Building quality and value into every product of the Webster line keeps us out in front every time. When you buy with an eye for top performance, remember that the Webster line includes carbon papers and typewriter ribbons, both cotton and silk; duplicating carbon papers and accessories; ribbons and carbons for Elliott-Fisher, Addressing, and International Business Machines. Write to F. S. Webster Company, 7 Amherst Street, Cambridge 42, Massachusetts — or contact our warehouse in any one of the cities below.

**WEBSTER'S
Typewriter Ribbons and
Micrometric Carbon Papers**

Warehouses in: New York Philadelphia Pittsburgh Detroit
Chicago San Francisco Cambridge



THIN PAPERS

Reduce

TYPING, MAILING
and FILING COSTS

Use

ESLEECK

THIN PAPERS

Fidelity Onion Skin
Clearcopy Onion Skin
Superior Manifold

Esleeck Manufacturing Co.
Turners Falls, Mass.

**THE MODERN PLASTIC
TYPE CLEANER THAT
PRESERVES THE LIFE OF
YOUR BUSINESS MACHINES**



**USED BY BUSINESS FIRMS
THROUGHOUT THE WORLD!**

International Business Machines
Metropolitan Life Insurance Co.
Prudential Life Insurance Co.
Eastman Kodak Co.
Western Electric
Cheney Silks
Texas Oil Co.

AT YOUR STATIONERS . . .
Or WRITE . . .

NORTA DISTRIBUTING CO.
1123 Broadway New York 10, N. Y.

(Continued from page 289)

office for both dictating and transcribing. Spools are interchangeable for use with additional machines.

Special clutch permits frequent and immediate changeover from the listening position to the recording position. Making changes in dictation is merely a matter of redictating where the change is desired which automatically "erases" previous dictation and records the new.

Foot control switches leave the stenographer's hands free to type. Transcribing time is said to be materially reduced. The operating procedure is simple and anyone who can type can make practical use of the machine.

For accurate reporting of a conversation among several people or a conference proceeding, a four-way mixer system of microphones may be attached to a single recording unit which may in turn be used for transcription. Lapel microphones, recorder stands, and telephone pick-up devices are available.

1 1 1

**OPENS LETTERS AT RATE
OF 100 PER MINUTE**



Letter opener named the Imp Enveloper, which is said can open up letters up to 100 a minute, is being marketed by the Industrial Molded Products Corp., 72 West Fillmore Ave., St. Paul 1, Minn. Once it is plugged into either AC or DC current, it may remain so because no electrical contact is made until the envelope is slid along the machine table where it trips a contact bar. Safety guards conceal the cutting wheel. Other features of the machine are self-sharpening blade, self oiling bronze bearings, and light weight—the machine weighs 3½ pounds packed for shipment.

1 1 1

**SAFETY STICKERS WARN
EMPLOYEES OF HAZARDS**

Self sticking safety stickers, 2" x 4", colored and worded like a miniature billboard, are made by the Howard Company 15811 Denker Ave., Gardena, Calif. Known as Safe-T-Stickers they are pressed in place where they catch a man's eye as he starts a hazardous job. They peel off easily and can be replaced with fresh reminders to keep their "new sign" effect.

**NEW AUTOMATIC RECORDING
AND REPRODUCING MACHINE**

A new machine for the automatic continuous recording of telephone conversations, hearings, conferences, interviews reports etc., has been introduced by the Miles Reproducer Co., Inc., 812 Broadway, New York 3, N. Y. Known as Filmgraph Model HK, the recorder and



Permanent recording machine takes
over 2 million words

instantaneous reproducer employs 2 reels, 6 mm., 14" in diameter.

Each 16mm. reel of safety film has a capacity of 300 hours, or over two million words, of permanent recording. One hundred sound tracks are put across the width of each film, and each track has a continuity up to 3 hours. Selection of recording for playback is facilitated by track and zone (footage) indicators. The machine starts automatically when the telephone bell (when used with Miles Telemike inductor) starts ringing, or sound is picked up by the microphone. A single machine can serve an entire organization by remote control.

Instantaneous and permanent playback may be had through private or personal ear phones, "soft" or auditorium type loud speaker. A wide range of accessories is available. Further details may be obtainable by writing the manufacturer.

1 1 1

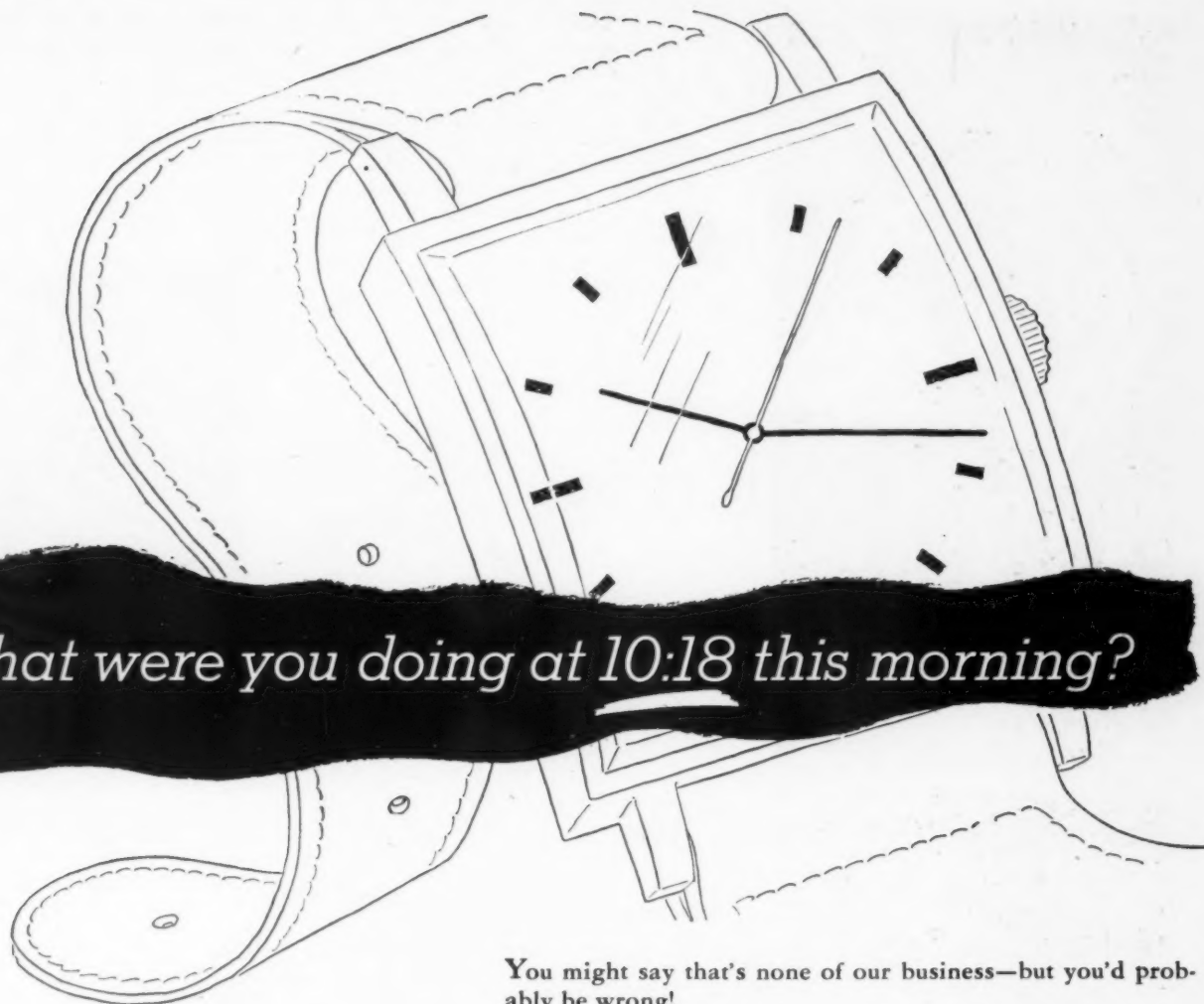
**HANDBOOK ON HUMAN RELATIONS
FOR MANAGEMENT LEADERS**

The first of a series of handbooks on the improvement of individual and group relationships in the nation's business structure, jointly written by business, scholastic and government authorities on personnel management and industrial relations, was published today by the American Management Association under the title "The Management Leader's Manual."

Designed primarily for operating executives, supervisors and foremen, whose management role it emphasizes, "The Management Leader's Manual" was compiled to promote wider understanding of managerial problems and techniques, particularly in the field of human relations. Edited by James O. Rice and M. J. Dooher, of the AMA staff, its seven sections include contributions of a score of management authorities.

The seven sections deal with the management leader's human relations respon-

(Please turn to page 292)



what were you doing at 10:18 this morning?

You might say that's none of our business—but you'd probably be wrong!

You see, the odds are that *any* time during office hours you'll be handling some kind of business form . . . checking it, writing on it, or just passing it along. The better part of your office staff will be doing the same thing. And if your forms are not efficient, *then all of you are wasting your time!*

It's our business to stop that sort of waste—by cutting down the time you give to paper work. Uarco Business Forms assure:

Minimum *handling* . . . forms are combined so that one form serves many departments . . . pre-assembling saves time and bother.

Minimum *writing* . . . all necessary copies, 20 or more, come from a single writing.


Minimum *looking* . . . facts are always easy to reach, easy to read.

Your Uarco Representative is trained to apply these savings to your operation. Call him in for a survey rather than take your own or another executive's time. There's no obligation. UARCO INCORPORATED, Chicago, Ill.; Cleveland, Ohio; Oakland, Calif.; Deep River, Conn. Offices in All Principal Cities.

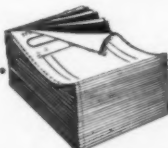
For Instance . . .

you may find Uarco E-Z-Outs your biggest time-saver. Use them in typewriters or for hand-written records—they put an end to carbon fuss. Copies are neatly held together for later additions, then detached with one easy motion.







SINGLE SET FORMS

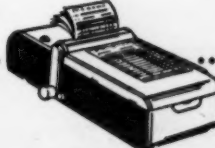


CONTINUOUS-STRIP FORMS
FOR TYPEWRITTEN AND BUSINESS MACHINE RECORDS

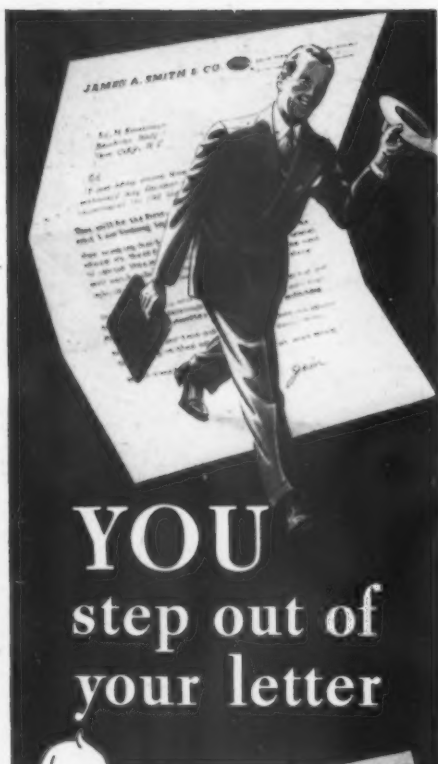




BUSINESS FORMS



AUTOGRAPHIC REGISTERS
AND REGISTER FORMS



YOU
step out of
your letter



Yes... you *do* step out of your letter. The thoughts you express, the tone of your phrases, the way your letter is appointed, the paper on which you write—all these speak plainly of you. Lend distinction to your letters with fine new cotton content business papers "by Fox River". FOX RIVER PAPER CORPORATION, Appleton, Wis.

Cotton Fibre Bond, Ledger, Onion Skin
"The more Cotton Fibre the finer the Paper"

OUR WATERMARK
is your quality guarantee

Look through
the paper...
see all three!



1 COTTON FIBRE

2 100 - 75 - 50 or 25%
COTTON FIBRE CONTENT

3 MADE 'by FOX RIVER'

(Continued from page 290)

sibilities, management leadership in a democracy, interviewing and counseling techniques, and means of diagnosing organization problems. Also included is a section of tests to determine the qualifications for management leadership.

The volume is designed for individual reading to further knowledge of the management structure, for supervisory conference training through chapter-by-chapter discussion, as a desk manual for executives and supervisors, and for general reading as an introduction to practical, professional management.

Spiral bound in blue leatherette, the manual sells at \$3.00 per copy. Quantity discounts are available to organizations desiring to use the manual for training purposes, to schools and colleges, professional and educational groups.

1 1 1

CIRCULAR ON USPM BANDETTES AND HOLDER

A new circular has been issued by Commercial Controls Corporation, P. O. Box 372, Rochester, N. Y., which illustrates and describes USPM Bandetts and Bandett Holder. The Bandetts are designed for quick and easy bundling of metered envelope mail for delivery to the post office. Made of strong fibre, brown paper, the Bandetts hold envelopes in a tight, firm bundle without damage to the edges. The strips, gummed on one end, are 1 3/4" wide and the correct length to band uniform bundles of the maximum quantity permitted under postal regulations. Printed on the top side are the words "metered mail" and space for meter number, date and name of mailer.

The Bandett Holder, designed to hold a bundle of 500 Bandetts, is of all metal construction, in standard gray wrinkled finish. It is made to hang on the wall in vertical position.

NEW "DIRECTIONAL PRODUCER" ANNOUNCED FOR EDIPHONE

A newly designed reproducer that eliminates audible "broadcasting" from dictating machine transcribers, is announced by Ediphone. It provides a transcriber which makes the recording audible only through the secretary's ear-



Makes recording audible only through secretary's earphones

phones. It is intended to prevent unauthorized persons overhearing confidential information and to avoid disturbing persons who may be working in the same office with the transcriber. The "Directional Reproducer" directs the sound from the reproducing jewel up through the ear tubes and absorbs those sounds which tend to be "broadcast" directly into the room. The new device will be standard equipment on the Ediphone "Miracle" and "Streamlined" models. It also is available as an extra for machines now in use.

(Please turn to page 294)

NO PUNCHING NECESSARY WITH *File-Rite* CATALOG RACK

**Instantly Racks
PUNCHED OR UNPUNCHED
CATALOGS
MANUALS
PRICE LISTS
LOOSE SHEETS
TELEPHONE BOOKS
INDEX PAGES
INSTRUCTION BOOKS**

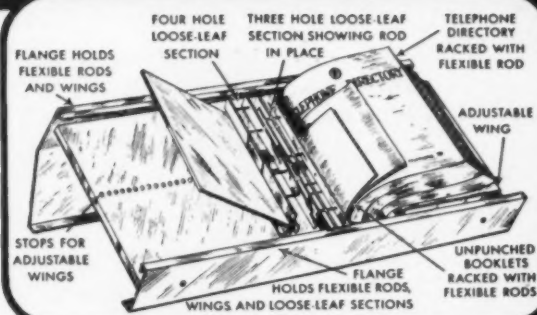
Any printed material up to
11 1/2" high.

★
Reduces racking and
reference time.

★
Makes it easier to keep
material up to date.

★
Three or four-hole sections
available for loose sheets.

★
Sections and bound material
securely held in rack with
flexible steel rods.



It is easy to keep catalogs, price lists and other sales or reference material up-to-date with the File-Rite catalog rack. No punching necessary. Material inserted or removed in a second. Widely used in many industries. Available in two sizes: No. 12 with 12" catalog capacity, and No. 24 with 24" capacity.

Ask your stationery store or write

NEWMAC COMPANY
423 TENTH STREET • SAN FRANCISCO • CALIF.

...IT STAPLES!
FOR PERMANENT FASTENING

...IT PINS!
FOR TEMPORARY FASTENING

...IT TACKS!
ON BULLETIN BOARDS, SHELVES, ETC.

...and it loads quicker, works slicker ... because of its Open Channel!

Chromium body protects the channel against grit and dust to insure clog-free performance. Super-hardened steel, precision engineered to last a lifetime!

Load a Swingline stapler with 100% round wire Swingline staples, and you have the speediest, most efficient stapling

team for office, factory, school or home.

SWINGLINE STAPLES are 100% round wire, pre-tested to insure rapid-fire penetration and clog-free action in any standard stapler. Look for the red, white and blue box at your stationer's.



Swingline
STAPLES STAPLERS



FEED PRODUCTS COMPANY, INC., LONG ISLAND CITY 1, N. Y.

DO/MORE

Posture Chairs



EXECUTIVE



DEPARTMENT HEAD



CLERICAL

**WITH
PERSONALIZED
Seating Service**

FOR ...

**EXECUTIVES
DEPARTMENT
HEADS
STENOGRAPHERS
CLERICAL STAFF
FACTORY WORKERS**

Do/More Chairs are the choice of thousands—for comfortable sitting, and postural aid to physical fitness, mental alertness. They're carefully fitted to the user... and to his or her work! For counsel on your seating problems, or for literature, write

**DOMORE CHAIR
COMPANY, INC.
Dept. 912
ELKHART, INDIANA**

DO/MORE

Seating Service



Never before such
FAST, EASY

FILING
portable file with



The Oxford
"Pendaflexer"

This new post-war "Pendaflexer" brings you double filing convenience—a handsome, sturdy steel filing cabinet on wheels, plus hanging Pendaflex* folders.

Roll the "Pendaflexer" anywhere you need it—that's convenience number one. Then file and find papers instantly in modern hanging Pendaflex* folders—that's convenience number two!

It's a combination that will break every filing and finding speed record wherever used. Get your "Pendaflexer" now—immediate delivery.

Reg. U.S. PAT. OFF.

OXFORD FILING SUPPLY COMPANY, INC.
329 Morgan Avenue, Brooklyn 6, N. Y.

Send Coupon for Illustrated Price List

Name.....
Address.....

NEW PLASTIC WINDOW SHADES ALLOW LIGHT WITH PRIVACY

Window shades, made of Plastic Mesh Vimlite, a product developed and manufactured by Celanese Corporation of America, New York, N. Y., are said to offer all the protection of ordinary window shades while letting light penetrate into the room. The shades provide



Plastic shades in use at nursing home

screening against the glaring rays of the sun, yet permit light to enter the room and at the same time assure complete privacy.

The shades are readily washable, and the material of which they are made will not support fire or combustion. Their plastic weave and plastic coating will far outlast ordinary material, it is claimed, and they are easily adjusted. The shades illustrated were made by Plastishade, Yonkers, N. Y.

ELECTRIC CALCULATOR IS COMPACT, EASILY OPERATED

The R. C. Allen 10-Key Electric Calculator, available for the first time for prompt delivery on a nation-wide scale, is a compact machine designed to solve the most complex problems in addition, subtraction, multiplication and division.

No trained operator or extensive knowledge of mathematics is necessary



10-Key electric calculator

with the machine, the manufacturer states. The machine is said to take up less space on a desk than the average letter-head, and has one hand, four-fingers operation. Features claimed for the calculator are fast multiplication with automatic spacing to the left or right; automatic division; and speedy subtraction and addition. Visible dials show all three problem factors in the line of vision. Each problem is proved as it is computed. The machine is manufactured by R. C. Allen Business Machines, Inc., 678 Front Avenue N.W., Grand Rapids, Mich.

SCUFF-PROOF PLASTIC UPHOLSTERY

Blanchardized Vinylite was recently announced by the United States Plywood Corporation, 55 W. 44th St., New York, N. Y., as "the most scuff-proof plastic ever devised for upholstery." Vinylite is said to have the highest resistance to scuffing of any plastic manufactured for use as upholstery, wall coverings, counter tops, will not stain, is not affected by most solvents, mild acids and alkalis, and will resist heat up to 180 deg. F.

United States Plywood Corporation is also distributor for Decorative Micarta, a material for table tops, counter tops, bars walls and other applications where abrasion and staining are to be considered. It is a high pressure laminate manufactured by Westinghouse Electric Corporation. Decorative Micarta comes in a wide array of colors and designs.

1 1 1

STIFFNESS TESTER FOR LIGHT METALS, PAPER, TEXTILES, FOIL



Illustration shows motor driven stiffness tester designed for tests on light metals, foil, paper, plastics, textiles, leather, hard rubber, fibre products and other thin flexible sheet materials, developed by W. & L. E. Gurley, Troy, New York. Maker states that the tester can accurately show the degrees of stiffness for such products as boxboards, playing cards, bristols, bonds and ledgers, coated textile fabrics, shoes, handbags, baby pants, plastics, leather, hard rubber, chewing gum, light metals and foil. Tester can be used for evaluating finishings of varnish, paste, lacquer, glue, wax, oil and other plasticizers. It is described in bulletin No. 1440.

1 1 1

CHEMICAL AND TECHNICAL DICTIONARY

Concise Chemical and Technical Dictionary, 1055 pages, which presents 50,000 definitions of terms used in Chemistry, Metallurgy, Pharmacy, Plastics, Physics, Mineralogy, Electricity, Engineering, etc., is announced by the Chemical Publishing Co., Inc., 26 Court Street, Department 33, Brooklyn 2, N. Y.

This new reference work interprets the latest advances in chemistry, science and technology, lists essential data for chem-

(Please turn to page 296)

RIGHT!



NORMAN SAKSVIG demonstrates *good posture*—foundation of correct typing technique. Feet flat and firm, one advanced slightly for body balance; back well supported, head erect, arms and wrists relaxed. Try it—and see how much fresher you feel at five o'clock!

WRONG!



FIVE ERRORS: Feet twisted, back and neck tense, eyes on typing line instead of on copy, arms and wrists high, fingers stiff. Imitate this bad posture for a half hour of steady typing, then do it right—and see for yourself what correct technique does for you!

RIGHT!



NOTICE ABOVE how Saksvig's middle finger reaches easily up to the top bank of keys while other fingers remain on the guide keys. A finger stroke is enough—and far faster than strokes employing full forearm or wrist. And—you make fewer errors!

WRONG!



ARM ACTION—raising hand entirely from keyboard to strike keys. Unnecessary effort—you'll feel it back of your shoulder blades at five o'clock—and you lose touch with your anchor position on the guide keys. Most common of faults. Keep the hands *down*!

"It's so much easier and faster to do it right," says NORMAN SAKSVIG

Can You ...

- Set both margins in one second?
- Insert paper straight, ready to type?
- Return carriage without losing speed?
- Turn back and type exactly over old work?



NORMAN SAKSVIG

Former professional typing champion, exponent of correct technique. Over 200,000 secretaries and typists have witnessed his convincing demonstrations.

THE answer is "Yes," if you have a modern Smith-Corona Office Typewriter. See below for note on the amazing Automatic Margin Set—ask any branch office or dealer to show you all the features "engineered" into these fine machines—to give you greater output, to save you time, to lessen fatigue.

Equip yourself with this most modern of typewriters—follow Saksvig's tips on how to get the most *out* of it. Then judge for yourself!

AUTOMATIC MARGIN SET...A SMITH-CORONA "EXCLUSIVE"



ONE HAND... ONE SECOND!



We photographed a light on Saksvig's finger, and timed him with a stop-watch.

Hand leaves keyboard, finger sets

right margin and left margin, then returns to keyboard. Time... *one second!* Figure that saving in a day's typing!



SMITH-CORONA
OFFICE TYPEWRITERS

Makers also of famous Smith-Corona Portable Typewriters, Adding Machines, Vivid Duplicators and Typebar Brand Ribbons and Carbons

L C SMITH & CORONA TYPEWRITERS INC SYRACUSE 1 N Y



TEAMING-UP TO SAVE MONEY

Teaming up is a young American soda fountain custom—which helps us illustrate the economy of our Club Run system of lithographing.

You see, with one turn of the press we can print up to sixteen different stationery items of letter-head size—more of smaller sizes. So *sixteen* or more customers can buy space on each run!

Naturally, this gang method of production leads to sizable savings.

Thus—lower prices for *you* on letterheads, envelopes, statements, invoices, order forms, noteheads and dozens of other items.

Of course, Club Run deliveries take a little longer, because of the short delay until the run's made up. But, by keeping your inventories at a comfortable level, you can trade time for dollars by "teaming-up" with a Club Run.

Write today for full particulars.

CLUB RUNS BY

The
REYNOLDS
&
REYNOLDS

COMPANY • DAYTON 7, OHIO

Established 1866

SALES OFFICES IN MANY PRINCIPAL CITIES

(Continued from page 294)

ical compounds, gives up-to-date information on trade name products, and includes various useful tables, including conversion tables for weights, measures, temperatures, specific gravity, indicators—their range and use, organic ring systems, etc.

It is designed to save time and effort for the professional and for the layman. The price is \$10. per copy.

1 1 1

HANDY STAPLE REMOVER



Designed to more quickly and easily remove staples without tearing the paper, or breaking finger nails, the "Handy" staple remover features a vise grip and spring action. It is operated by inserting its wedge shaped tip under the staple which is removed by pressure of the thumb on the lever. It is a handy tool for removing staples from correspondence files, bulletin boards, drafting boards, window displays, etc.

1 1 1

OFFICE OF TECHNICAL SERVICES RESEARCH REPORTS AVAILABLE

Approximately 2500 reports of research on wartime technical problems sponsored by the Office of Scientific Research and Development are now available to the public, according to a *Bibliography and Index* published by the Office of Technical Services, Department of Commerce.

The items listed in the *Bibliography and Index* comprise all of the numbered reports published by OSRD between 1941 and 1945 which are no longer held confidential in the interests of military security. Single copies of the reports have been placed on file with OTS which in turn sells photostat or microfilm copies of them to the public at approximate cost of reproduction.

Edited by W. Kenneth Lowry, who heads OTS' Reference Service Section, the *Bibliography and Index* is divided into three parts.

Part I consists of a bibliography which cites author, title, and the price of photostat and microfilm copies of each report. It also makes reference to the page number of the "Bibliography of Scientific

(Please turn to page 298)

Maybe your Record System

is holding up the parade



Too many businesses are struggling under the handicap of a Model T record system simply because no one has had the time to do anything about it. As a result, shipments lag, inventory bottle necks, operating capital is tied up, and sales slow down to keep in step.

Your Diebold man can contribute a great deal toward speeding up your work-in-process schedule, however satisfactory, through practical control methods. With every type of record system to offer he is prepared to give you an unbiased recommendation following a careful analysis of your situation.

Even though you don't feel the need for major changes, why not send for the new Diebold booklet "Controlling, Handling and Housing Shop Orders," or phone the nearest Diebold Branch or dealer for interesting and valuable suggestions?



DIEBOLD, INCORPORATED
1413 Fifth Street
Canton 2, Ohio

Please send my free copy of "Controlling, Handling and Housing Shop Orders" that tells how to speed up my paper work.

Name

Firm Name

Address

City and State

Diebold

**MICROFILM • ROTARY, VERTICAL AND VISIBLE FILING
EQUIPMENT • SAFES, CHESTS AND VAULT DOORS
• BANK VAULT EQUIPMENT • BURGLAR ALARMS •
HOLLOW METAL DOORS AND TRIM**

Give Your Story BACKGROUND

YOUR STATIONERY is background for your sales story. Make sure that story gets the background it deserves. See your printer—he's an expert. Tell him what special use you plan for your stationery... If you're searching for a paper of distinction for a story of importance it's more than likely your printer will recommend—



Rising Line Marque

✓ 25% rag
✓ 2 weights

✓ exclusive pattern inspired by Italian Handmade paper
✓ 3 pastel shades and white
✓ envelopes in 6 sizes
✓ excellent printing surface for die-stamping, lithography, gravure or letterpress

When you want to **KNOW**... go to an expert!



Rising Papers

Ask your printer... he **KNOWS** paper!

Rising Paper Company, Housatonic, Mass.

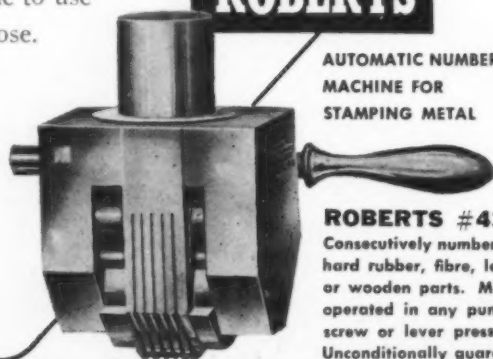
There's one **RIGHT** machine

for every numbering job

Over 50 years of experience has given us the "know-how" to solve any problem of numbering—whether it involves a hand, typographic, stamping or embossing operation. Let us advise you on your numbering problems. We'll tell you the right machine to use for your particular purpose.



SEND
FOR
CATALOG



ROBERTS

**AUTOMATIC NUMBERING
MACHINE FOR
STAMPING METAL**

ROBERTS #43

Consecutively numbers all metal, hard rubber, fibre, leather or wooden parts. May be operated in any punch, screw or lever press. Unconditionally guaranteed.

ROBERTS NUMBERING MACHINE CO.

703 JAMAICA AVENUE

BROOKLYN 8, NEW YORK

(Continued from page 296)

fic and Industrial Reports" (an OTS publication available from the Superintendent of Documents for \$10 a year) where an abstract of each report may be found. Part II is a cross reference list which correlates the OSRD code number and OTS number for each report. Part III is an author and subject index to Part I. It contains about 10,000 references and cross references.

The *Bibliography and Index* will greatly facilitate access to the documents for businessmen, technicians, and scientists, according to Mr. Lowry. The 2500 reports listed comprise a large part of the work of OSRD during the war years to solve national defense problems in medicine, chemistry, metallurgy, engineering, aeronautics, electronics, personnel training, and several other major fields. Although many of OSRD's research projects were related to specific wartime needs, much of the material finds practical application for peacetime production in private industry, Mr. Lowry said.

Orders for the *Bibliography and Index* (PB-78000; *OSRD Reports-Bibliography and Index*; multilith copy, 75¢; 109 pages) should be addressed to the Office of Technical Services, Department of Commerce, Washington 25, D. C., and should be accompanied by check or money order, payable to the Treasurer of the United States.

1 1 1

UTILITY STAND

Illustration shows the Champion No. 1618 Utility Stand, announced by Maso Steel Products, 500 South Throop Street, Chicago 7, Ill. This is a factory set-up



model, which features Mansonite top, 1 5/8" wheels for free rolling casters; all steel tubing, continuous piano hinges, and baked enamel walnut finish. The size of the unit is 16" x 18", overall 36" x 16", and 27" high.

1 1 1

CHAMPION LAMP OFFERS LIGHTING CALCULATOR

The Champion Lamp Works, Lynn, Mass., has developed a new and simplified lighting calculator, the Champion Lightrule.

A single setting of the slide rule gives the user the foot candles, lumens, required per lamp or fixture, or area per

(Please turn to page 300)

Up to date... for '48



The new 7141 series is
on "EYE-EASE" paper
... so easy on the eyes.
Exclusively
NATIONAL!

YES . . . NATIONAL Unit Accounting Forms give you the very latest in form design for 1948 requirements.

The new 7141 series in the popular 9 1/4" x 11 7/8" size . . . together with the consumer approved 11" x 14" 7072 line . . . are all expertly planned for bookkeeping with a minimum of effort. Adaptable to any business, with a wide choice of forms available.

This means you can save on the expense of specially printed forms, and buy in smaller quantities as well.

Ask your stationer about these NATIONAL Unit Accounting Forms. Write us, too, for a copy of circular 41 illustrating and describing the line.

NATIONAL BLANK BOOK COMPANY

HOLYOKE, MASSACHUSETTS

NEW YORK

CHICAGO

BOSTON

SAN FRANCISCO

PAYROLLS ★

PROFITS ★

PLEASURE ★



There's an old Yankee saying, "Money makes the mare go". It's true, but money — and wages — can come from increased production. An alert, trained personnel with proper incentive can give better production.

Sheppard Pay Roll Envelopes play their part, too. Besides being quality envelopes — the ones with the tangy real-mint Flavor-Seal flap — they are good morale boosters. Write today for the story on Shepco's quality products. Ask for Booklet No. 12.



You can TASTE the difference!

Manufactured by SHEPPARD ENVELOPE CO.
One Envelope Terrace | phone 2-4674
WORCESTER 4, MASS.

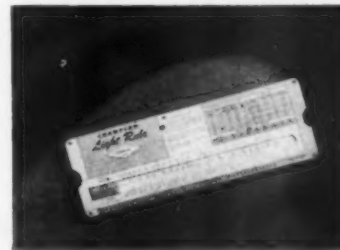
NEW YORK OFFICE: 25 EAST 26TH STREET, NEW YORK 10, N. Y.
TELEPHONE: MURRAY HILL 3-8160-61

Copyright by the Sheppard Envelope Co.

(Continued from page 298)

lamp or fixture. It is the only lighting calculator that applies to any type of lamp or make of lighting fixture without reference to catalog numbers.

On the reverse side of the Lightrule, is a table which provides quick deter-



Champion's lighting calculator

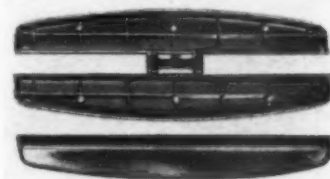
mination of room indexes for various room sizes and fixture mounting heights, together with an illustrated chart that indicates the applicable fixture types and coefficients of utilization. Directions and solutions of typical problems are included.

A Lightrule will be sent to anyone requesting it on his company letterhead.

1 1 1

LARGE INJECTION MOLDED CHAIR ARM REST

An all too common belief that injection moulded parts or products are greatly limited in size has been disproven by Worcester Moulded Plastic Co. of Worcester, Mass. in the production of



These injection molded polystyrene chair arms are 19½" long, 3" wide, and 1" in depth.

the giant arm rest for the BarcaLoafer, a product of the Barcalo Mfg. Co. of Buffalo, N. Y.

These arm rests, moulded in polystyrene, styled for comfort and in keeping with the streamlined features of the chair, are 19½" long, three inches wide, and one inch in depth. Such dimensions alone require a mould of exceptional proportion. Worcester Moulded engineers produce these arm rests a pair at a time, and with three metal inserts moulded in, which serve to fasten the arms to the chair.

1 1 1

STAPLER STILL OPERATING AFTER "BLITZ" BOMBING

Speed Products Company, Inc., Long Island City, N. Y., manufacturers of the Tot stapling machine, have received word that one of their machines still functions perfectly after having withstood a "blitz" bombing visited on London during the late war.

A letter from A. B. Middlebrook, di-

(Please turn to page 305)



KEEPING AN EYE TO THE FUTURE

The efforts we put into meeting current paper needs are only part of the story of International's activities. Equally important, we keep the future in mind—analyzing tomorrow's paper needs as well.

Our organization can therefore plan ahead in preparing raw materials in the great woodlands. Likewise, our research men and technicians are guided as to the direction their work shall take. Paper machines, too, can be scheduled far in advance for the desired production.

All along the line of manufacture and supply—including our sales staffs and distributors—this "eye to the future" attitude pre-

vails. The kind of planning that considers now and the future is all-essential to the requirements of the millions who depend on paper and its products. International Paper Company, 220 East 42nd Street, New York 17, N. Y.



WIRE MARKERS NOW EQUIPPED WITH SELF-STARTER STRIPS

The standard cards on which self-adhesive "Quik-Label" wire markers are mounted now come equipped with two self-starter strips, according to W. H. Brady Co., manufacturers. Standard cards have one row of $1\frac{1}{2}$ " long labels, and with the new feature the labels can be cut in half to make each label $\frac{3}{4}$ " long.



Self-starter strips aid in removal of wire markers

The first self-starter strip, shown in the illustration, aids in the removal of the top row of $\frac{3}{4}$ " long labels by automatically exposing the end of each label so that it may be grasped by the user. After the top row of labels has been

used, the second self-starter strip is removed to expose the ends of the $\frac{3}{4}$ " labels in the second row. By this method users now get twice as many labels on a card, and the shorter labels are suited for marking smaller diameter wires.

Literature and sample cards are available from Dept. 54, W. H. Brady Co., 815 N. Third Street, Milwaukee 3, Wis.

1 1 1

NEW TALK-A-PHONE INTERCOMMUNICATION SYSTEM

DeLuxe line of inter-communication systems is announced by the Talk-A-Phone Laboratories, 1512 South Pulaski Road, Chicago, Ill. The master station and sub-station for the Krul-40 DeLuxe system delivers a maximum of $2\frac{1}{2}$ watts of "voice-range" power. Basic systems, consisting of one master station and one sub-station may be built up progressively adding up sub-stations as they are needed. The master station operates on 110-115 volts, either a-c or d-c. The sub-stations, which consume no power, may be placed up to 3000 feet from the master station, and are available in metal or wood. By means of a "silent feature", the master station picks up none of the noise surrounding the sub-station, yet permits the sub-stations to originate calls to the master station.

ELECTRIC PENCIL SHARPENER



Illustration shows the Morrisharp electric pencil sharpener made by the Bert M. Morris Co., Los Angeles, Calif. The housing is molded of Tenite, cellulose acetate butyrate, and has a natural grain mahogany effect. The sharpener works on either a-c or d-c current. Sharpening a pencil is a matter of inserting the pencil in the sharpener, the sharpness of the point being regulated by a three-position lever. The model shown is for standard graphite or colored crayon pencils. A draftsman's model is available which sharpens only the wood and does not touch the lead.

(Please turn to page 305)

HAND, FOOT, POWER OPERATED STAPLING MACHINES 60 MODELS for INDUSTRIAL & OFFICE USE

Precision Stapling Machines are made of fine quality materials to withstand long, hard usage.



Lightweight
Compact
Simple

MODEL F. P. S.

Foot or Power Operated
SPEED & STRENGTH

Capable of stitching bottoms of corrugated and fibre cartons up to 200 per hour.

OTHER USES

ITEMS on Cards—TELESCOPIC Carton Toy Manufacturing; Hardware boxes — Book Binding — Numerous Production Line Jobs.

The UNIVERSAL HAMMER TACKER



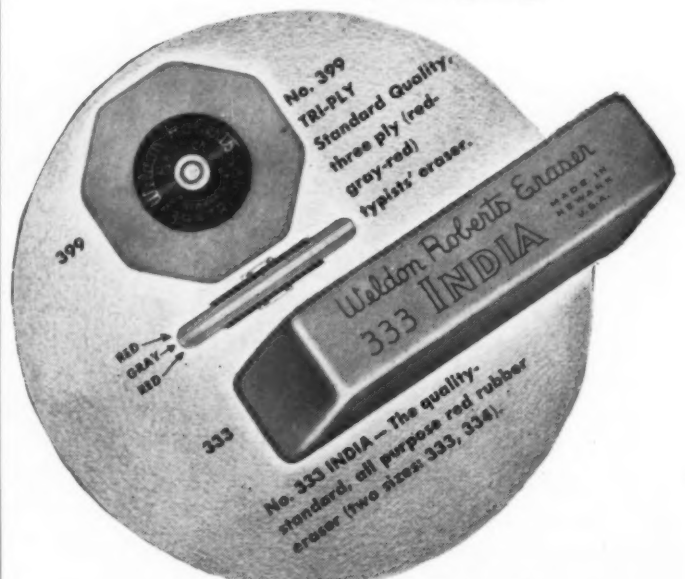
Drives a Staple in one blow thru wood, fibre, cloth, etc. Ideal for Bulletin Board Notices, Display work, tagging cases, crates, etc. If you have a special stapling, fastening or tacking problem, our Engineering Dept. will be pleased to work with you. Write for Literature.

PRECISION STAPLE CORPORATION

Manufacturers of PRECISION BUILT Stapling Machines & Staples
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They Correct Mistakes
in Any Language



Two all-purpose
quality erasers.

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WELDON ROBERTS RUBBER COMPANY
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From the smallest pocket memo to your master ledger, Federbush products have the qualities of champions . . . finest materials . . . careful workmanship . . . attention to utility. Immediately available from stock. Packed 2 to a box.



SECTIONAL POST BINDER
ENDLOCK—STYLE CMJ. Binding: Extra Heavy Blue Slate Canvas, Red Leather Corners; black Duco metal parts; piano hinge; end caps of highly nickel plated steel.



SECTIONAL POST BINDER
TOPLOCK—STYLE FRB. Binding: Full Black Imitation Leather, blind tooled; seasoned, heavy binder board with rounded corners; end caps of high nickel plated steel.



SECTIONAL POST BINDER
TOPLOCK—STYLE FR. Binding: Fine Grade Blue Slate Canvas, Red Leather Corners; medium weight binder board with rounded corners; end caps of highly nickel plated steel.

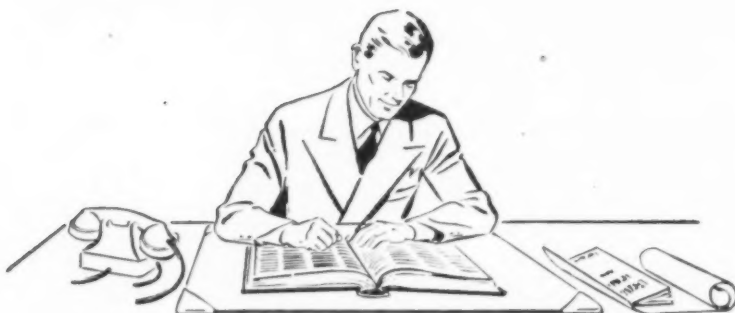


SECTIONAL POST BINDER
KNOBLOCK—STYLE PEM. Binding: Full Black Levant Grain Imitation Leather; stainless steel metal rims; metal parts black Japanned; piano hinge; end caps of highly nickel plated steel.

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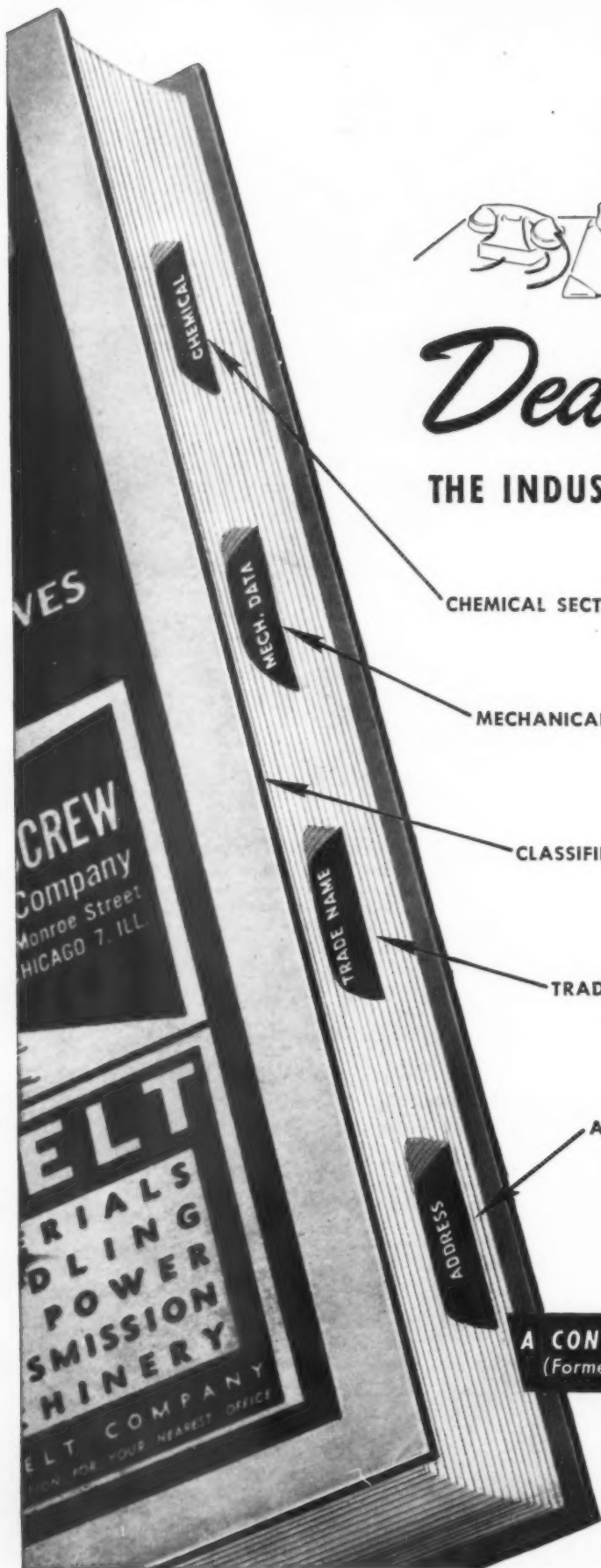
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A CONOVER-MAST PUBLICATION
(Formerly Plant-Production Directory)

PLANT PURCHASING DIRECTORY

333 No. Michigan Avenue, Chicago 1, Illinois



(Continued from page 300)

rector of Pilot (Stationers) Ltd., London, says that the machine was in their building the night of April 18-19 when it was burned in an air raid. "The lower



Through the "blitz" and still in good condition

part of our premises was saved", he relates, "but we had no roof for about ten weeks and, after the fire, we were damaged by water and rain, but the Tot stapling machine still functions".

1 1 1

NEW YORK SYSTEMS AND PROCEDURES CHAPTER ELECTS

The New York City Chapter No. 1 of the Systems and Procedures Association of America announced the election of new officers for the fiscal year 1947-1948. The officers to serve for that fiscal year are: president, H. John Ross, Continental Can Co.; vice-president, Everett J. Livesey, The Dime Savings Bank of Brooklyn; treasurer, Frank Hoffman, Standard Oil Co. (N. J.); secretary, John H. Beatty, Metropolitan Life Insurance Company; member-at-large, Winfield P. Swanton, Union Carbide & Carbon Corp.

It was also announced that this chapter had established a new committee, the Administrative Research Committee, under the chairmanship of Mr. Floyd Baughman. The purpose of this committee is to develop a body of literature which will aid managers of systems departments in the successful operation of their functions. This will include specifically, the following:

1. A survey to ascertain the types and extent of job classifications in use in organizations in connection with Systems Engineers. 2. In that connection, the committee will develop proposed standard nomenclature and classifications. 3. A survey to ascertain current salary brackets covering Systems Engineers in various classifications. 4. A survey to ascertain the relative size of systems departments and their scope of action in companies of various sizes. 5. The preparation of a bibliography of books, magazine articles, and pamphlets bearing on the systems function.

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"I buy thousands of dollars worth of printing every year and, to me, the name *Weston* has always meant top quality in papers for business records and correspondence. Naturally, I assumed it also meant top price. Was I surprised to learn that *grade for grade* Weston papers cost no more than any other cotton fibre paper suited for important record keeping or correspondence."

And if you value the added satisfaction, efficiency and security of using *Weston* papers, then it actually costs *less* to keep all records worth keeping on *Weston Papers*. Ask your supplier to put the next lot on the equivalent *Weston* grade. You'll be surprised and pleased at the difference.

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DALTON, MASSACHUSETTS

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WESTON'S CENTENNIAL LEDGER
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for Business Records*



PERSONALITIES

in the NEWS

Herbert W. McKeague has been appointed Purchasing Agent, and J. Russell Todd Assistant Purchasing Agent, for the home radio division of the Westinghouse Electric Corporation.

Mr. McKeague was formerly assistant to the vice president in the purchases



Herbert W. McKeague

and traffic division at Pittsburgh. He joined Westinghouse in 1940 as buyer and assistant purchasing agent in the industrial electronics division at Baltimore, and two years later, was transferred to the transformer division at Sharon, Pa., as purchasing agent.

A native of Everett, Mass., Mr. McKeague was graduated from Massachusetts Institute of Technology in 1934 with a degree of Bachelor of Science in administrative and mechanical engineering. He is a member of the University Club, National Association of Purchasing Agents and the MIT club of Western Pennsylvania.

Mr. Todd is a graduate of Rensselaer Polytechnic Institute in electrical engineering. He joined Westinghouse in 1941 and has had experience in the purchasing departments at East Pittsburgh, East Springfield, Mass., Baltimore, and Sunbury.

P. Willard Neilson has been named Manager of Purchasing for the Ensign-Bickford Co., Simsbury, Conn. He succeeds Frederick D. Houghton, who is now assistant to the director of the company's recently established new product development department. Mr. Neilson first joined the company in the central stores department, and later became chief stock clerk of the department. Recently he served as assistant manager of purchasing.

George E. Kleinoeder has succeeded the late F. W. Carstens as Purchasing Agent for Medusa Portland Cement Co., Cleve-

land, O. He joined the company 30 years ago and had been Mr. Carstens' assistant since 1942. He is a veteran of World War I.

Gerard C. Gambs has been appointed manager of the Service Department of the Research and Development Division of Pittsburgh Consolidation Coal Company, Library, Pa., according to an announcement by Dr. Howard S. Turner, assistant director of the division.

The functions of purchasing, personnel, accounting, and market research will be under the control of the Service Department. Mr. Gambs will also serve as a coal mining engineering consultant to the projects of the division.

Mr. Gambs was educated at Ohio State University, receiving a bachelor's degree in 1940. He was employed by Pittsburgh Coal Co. as a junior mining engineer until his entry into military



Gerard C. Gambs

service in 1942. He served for four years with the Corp of Engineers, where he achieved the rank of major with administrative duties on the atomic bomb project in laboratories at Columbia University and at Oak Ridge, Tenn. During the past year he served as assistant professor at the engineering experiment station of Ohio State University.

Alex Taller, formerly specification manager of the Board of Higher Education, New York, N. Y., has been appointed assistant business manager of City College of New York, and will have charge of purchases for the institution. He will retain his status as assistant professor and will continue to conduct the two courses in purchasing for C.C.N.Y. Julius John Gates succeeds him in the Board of Higher Education.

Walter G. Joyce has been named to succeed Ura M. Finch as City Purchasing Agent of Memphis, Tenn. Mr. Finch resigned last month to enter private business.

Mr. Joyce, an employee of the city for the past 18 years, had been city delinquent tax collector for the past six years. He was reared in Memphis, and is a graduate of Christian Brothers college.

John C. Hale has been appointed insurance manager and consultant on purchasing and engineering of the Research Corporation, Bound Brook, N. J. He was formerly purchasing agent, and is succeeded in that post by C. W. Byerly.

A. G. Hopcraft, Purchasing Agent for the Cleveland Worm & Gear Co., was the featured speaker at a recent safety dinner of the Cleveland Transit System. The affair was held to honor the building department of the system for winning a safety contest.

Carl L. Anderson has been appointed Director of Purchases for the Middle West Division of the Great Atlantic & Pacific Tea Company. Mr. Anderson, formerly a Chicago unit buyer, succeeds Harry B. George, transferred to the company's New York headquarters.

Richard S. Wentz has been named Purchasing Agent for The Townmotor Corporation, Cleveland, O., to succeed H. Neff, who resigned. Mr. Wentz had



Richard S. Wentz

been with the purchasing department of The Koppers Co. since 1940 until his present appointment, and previously was with the National Tube Co., Pittsburgh, Pa.

(Please turn to page 308)

SUN SOLVES A MAJOR METAL- WORKING PROBLEM



NEW
SUNICUT
with Petrofac*

In the compounding of metal cutting lubricants, leading manufacturers have long obtained certain beneficial properties through the inclusion of lard oils or other oils of animal or vegetable origin. Unfortunately, such oils *are apt to turn rancid or support bacterial growth*, contributing to skin infections. Such oils *are also subject to wide fluctuations in quality and price*. For instance, the price of lard oil recently increased 2½ times.

The discovery of a cutting oil ingredient that would not be subject to rancidity or to fluctuations in price or quality has long been a part of Sun Oil Company's program of continuous research.

Sun scientists—who have pioneered for more than 20 years in the field of all-petroleum cutting oils—recently developed several new compounds of this nature. One of these, a unique polar compound now identified by the name Petrofac, was tested in a multitude of different combinations with other ingredients.

The most effective of these experimental cutting oils was tested extensively in Sun's metalworking laboratories. Then further tests were made in cooperation with industry on lathes, broaches, millers, automatics—practically all kinds of machine tools. Finally many thousands of barrels of the new cutting oils—made with Petrofac—were used in regular metal cutting operations by Sun customers.

Results have been equal to, or better than, those obtained with the famous old grades of Sunicut. Both on high speed automatic machines and in extremely heavy duty operations, Sunicut with Petrofac has *lengthened cutting tool life and improved finish*. Also, because Petrofac is an all-petroleum product, under Sun control from crude to finished cutting oil, the new grades of Sunicut are *freed from the unpredictable fluctuations in quality and price* to which cutting oils containing vegetable or animal fats are subject.

Furthermore, unlike vegetable and animal oils, Petrofac in the new grades of Sunicut *can't turn rancid, can't support skin-irritating bacterial growth*.

Petrofac, and the improved grades of Sunicut cutting oils made with it, are typical results of Sun's research program. Its development means increased productivity for industry—ultimately *more for less* for the consumer.

For further information about the performance of the new grades of Sunicut, write . . .

SUN OIL COMPANY
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* Petrofac is a trade mark of Sun Oil Company.

Frederick E. Wilkes, Purchasing Agent for Lincoln Rochester Trust Company, Rochester, N. Y., for more than 20 years, recently celebrated his fortieth anniversary with the bank.

Mr. Wilkes joined the old Lincoln National Bank in July, 1907, as a messenger and successively held the positions of clearing house clerk, collection clerk,



Frederick E. Wilkes

note teller, discount clerk, receiving teller, and foreign exchange manager. After the Lincoln National Bank was merged with the Alliance Bank to form the Lincoln Alliance Bank & Trust Company in 1920, he moved to the main office and later became purchasing agent.

Born on a farm in Galen, Wyne County, New York, he spent his boyhood in Lyon, N. Y., later moving to Rochester, where he was graduated from the old Free Academy and Rochester Business Institute. As purchasing agent for the Lincoln Rochester Trust Company, successor to Lincoln Alliance Bank and Rochester Trust and Safe Deposit Company, Mr. Wilkes is credited with purchasing some sixteen million checks a year, among the hundreds of items which he buys.

Charles E. Nelson has been appointed assistant to James E. DeLong, president of the Waukesha Motor Company, Waukesha, Wis., with the title Assistant to the President. The post was recently created.

Mr. Nelson entered the Waukesha Mo-



C. E. Nelson, Jr.

tor organization in 1929 following several years as state wholesale representative for a major motor car manufacturer. His earliest activities with the company were connected with the financial department and led to his appointment as secretary and treasurer of the Faegol Truck and Motor Coach Co., Oakland, Calif., which in 1933 became a subsidiary of

the Waukesha Motor Co. Returning to Waukesha in 1934, he became factory production manager, and since June, 1936 he has been Director of Purchases and Production Planning. His new duties will be in addition to his responsibilities in that post.

Mr. Nelson is widely known in the purchasing and management fields, having been president of the Milwaukee chapter of the National Office Management Association and a member of the Milwaukee Association of Purchasing Agents for a number of years. He was recently elected a director and member of the executive committee of the Internal Combustion Engine Institute, replacing James E. DeLong, a former president of the Institute. He is also a director of the Waukesha National Bank.

Mr. Nelson received his early education in the public schools of Waukesha and St. John's Military Academy, Delafield, Wis. He graduated from the University of Wisconsin in 1927 with a degree in business administration.

E. C. Austin has been appointed Manager of Purchasing and Traffic, and **R. L. Dowrick** as Purchasing Agent, by the Arabian American Oil Co.

Mr. Austin joined the California Consumers Co., an affiliate of the Standard Oil Co. of California in 1932. He later transferred to California Consolidated Water Co. as purchasing agent. In 1935 he moved to Standard Oil Co. of California, assigned to foreign purchasing, and in 1940 was transferred to Arabian American Oil Co.

Mr. Dowrick, who joined the company, in 1944, was formerly in charge of the San Francisco Purchasing office on the Bahrain refinery project, and previously in the purchasing department of Standard Oil Company of California, which he joined in 1929.

William P. Bunyon of Watertown, Mass., has been appointed Purchasing Agent for Fordham University according to an announcement by the Rev. Robert I. Gannon S. J., President of Fordham.

This is a newly created post in the administrative staff made necessary by its growth into the largest Catholic educational institution in North America. Fordham, this year, will be providing for over 13,000 students.

Mr. Bunyon was born in Cambridge and is a graduate of Cambridge High and Latin School, and Boston College. After starting his business career with the Minneapolis-Honeywell Regulator Company, he later became associated with Harvard University and remained there for over eighteen years, the last eight of which were spent as assistant Purchasing Agent.

He is a member of the New England Purchasing Agents Association, the National Association of Purchasing Agents and the Educational Buyers Association. He was vice-chairman of the purchasing committee of the Cambridge chapter of the American Red Cross and also vice-chairman of the Bullock Fund of the City of Cambridge.

Paul Rhodes has been appointed Purchasing Agent for the Hyster Company, with offices at the Portland, Ore., main office. He has been with the company since September, 1945, working in coordinating and expediting of materials in the Chicago office.

Previous to joining the company, Mr. Rhodes worked in the Chicago office of



Paul Rhodes

the U. S. Engineers during the war years. For ten years previous he was engaged in sales work in Chicago for Hemphill Noyes, Thomson and McKinnon, and Tallman, Robbins and Co.

A. Landow, former manager of production, has been promoted to Manager, Purchasing Division, of the Kresno-Stamm Manufacturing Co. (America) Inc., Palisades Park, N. J.

James W. Franklin has been named Director of Purchases and Traffic for The Celotex Corporation, Chicago, Ill. The post was newly created in a readjustment of operations necessitated by the increasing business and activities of the company. Purchasing and traffic functions, formerly directed by the vice-president in charge of operations, are now combined under the new office. **P. D. Walsh** continues as General Traffic Manager and **Harry B. Cleveland**, heretofore assistant in the purchasing department, has been appointed General Purchasing Agent to fill the position vacated by Mr. Franklin.



E. A. Stevens, A. D. Moss

E. A. Stevens, left, recently appointed Director of Purchases of The B. F. Goodrich Company is shown with **Amos D. Moss**, who retired from that post after 48 years service with the company, at a farewell dinner given for Mr. Moss by his associates.

(Please turn to page 310)

Help for handling hungry husbands



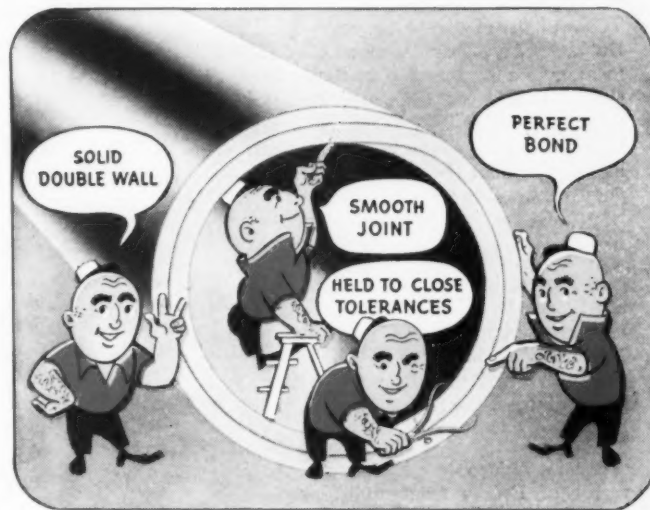
1. SIZZLING STEAK with potatoes and gravy . . . or fresh lake trout with french fries . . . whatever whets a man's appetite is the kind of dish a conscientious wife seeks to serve. She knows the way to a husband's heart is partly through his stomach. But she needs help to get on the path.



2. THIS VALUABLE aid comes from her modern gas range. With its oven regulator, its automatic timer and a dozen other important gadgets, the new range gives free play to her culinary talents. But gas ranges weren't always as dependable as those that grace today's kitchens.



3. BUNDYWELD* TUBING in supply lines, flash tubes and pilot light tubes helps give this new convenience to cooking. Similarly, Bundyweld Tubing contributes to the efficiency of hundreds of other modern products by carrying fuel, lubricants, oil, vacuums, hydraulic fluids, beverages and refrigerants.



4. BUNDYWELD is different from other tubing. A single strip of basic metal, coated with a bonding metal, is rolled continuously twice laterally into tubular form, then metalurgically bonded by intense heat—carefully controlled—to form a solid, double wall tube, held to close dimensions.

5. SPECIFY BUNDYWELD! That's the recommendation today from an army of engineers and product designers who recognize the advantages of this unique, superior tubing. Let Bundy Research and Engineering Departments illustrate the advantages of Bundy Tubing for your product. Available in steel, Monel and nickel. *Bundy Tubing Company, Detroit 14, Michigan.*

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Seattle 4, Wash.

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861 Bay St.
Toronto 5, Canada

Vernon L. Smith has resigned as purchasing agent for Manufacturers & Fabricators, Inc., Elyria, O., to go into business in Florida. H. R. Roffey, vice-president has assumed direction of all buying until the appointment of a successor to Mr. Smith.

Henry C. Forster, formerly purchasing agent for Ekco Products Company, Chicago, Ill., has been appointed to the new post of merchandise manager for the company. John L. Moore, formerly manager of Ekco's Byesville, O., plant, has been named purchasing agent. The appointments were announced by Arthur Keating, president of the company.

Mr. Moore, who has been with Ekco for 25 years, was superintendent of the Chicago plant, prior to managing the Byesville factory which was acquired last year. Mr. Forster, before joining the company, was manager of the housewares division of Montgomery Ward & Co.

R. C. McDonald has been named production manager of the Indian Motorcycle Co., Springfield, Mass. He will be in charge of purchasing, receiving, scheduling and the controlling and handling of materials.

E. C. Ball has succeeded W. J. Herrmann as Purchasing Agent of the Houston, Tex., plant of the Goodyear Synthetic Rubber Corp. Mr. Herrmann resigned to assume a partnership in the Industrial Chemical Cleaner Co. Mr. Ball joined the company in 1943 as material receiving clerk, and advanced to foreman of his department before his present appointment.

W. L. Reynolds has been appointed manager, Purchasing and Stock Control, Supply Stores Division of International Derrick and Equipment Co., Dallas, Tex. Mr. Reynolds has been with the company since 1941 and was formerly purchasing agent of the Supply Stores Division.

E. Van Vechten has been appointed Director of Procurement and Materiel for Pacific Airmotive Corp., Burbank, Calif. A former president of the Purchasing Agents Association of Chicago, he was once director of Purchases for the United Air Lines, but had left purchasing to become Western sales manager for the Weatherhead Co.

OBITUARY

Carleton A. "Mike" Kelley, former Purchasing Agent for the Southern Sierras Power Co., predecessor organization to the California Electric Power Co., Riverside, Calif., and president of the National Association of Purchasing Agents in 1936-37, died on July 14, after a brief illness. He was 74 years old.

A native of Iowa, Mr. Kelley attended Amherst College, where he was a class-

mate of Calvin Coolidge and Dwight Morrow. He practiced law in Denver, Colo., for several years, and during his residence there became Adjutant General of the state. In 1913, he joined a group of Denver business men in organizing the Southern Sierras Power Co., and went to Riverside. Starting with general executive duties, one of his first assignments was the organization of a purchasing department.



Carleton A. Kelley

Mr. Kelley became a member of the Los Angeles Purchasing Agents Association in 1920. He attended the N.A. P.A. convention on the Pacific Coast in 1926, and missed few of the annual gatherings after that. He was elected president of the Los Angeles group in 1933-34, and national director the following year. In 1935 he was named to the National Executive Committee as Vice-President for District No. 1, and directed the effective membership campaign during that year. He was elected to the presidency of the national association at the New Orleans convention in 1936.

In 1941 Mr. Kelley participated with Donald M. Nelson in organizing the Office of Production Management which later became the War Production Board. He returned from that post a few weeks before the attack on Pearl Harbor, and was immediately drafted to organize and head the Riverside Defense Council upon this country's entry into the war.

Surviving Mr. Kelley are his wife, Ina Young Kelley; a daughter, Mrs. Patricia Mason of Washington, D. C.; a granddaughter, Kathleen Harris; a brother, Will Kelley and a sister, Mrs. Fred Burnham, both of Chicago.

Edward W. Hills, fifty-eight, purchasing agent of the American Sugar Refining Company, 120 Wall Street, New York N. Y., died August 6 at his home in Hollis, N. Y. He had been with the corporation since 1907.

Mr. Hills was born in Brooklyn and in later years was a member of the Mohawk Athletic Club of Brooklyn. From 1906 to 1913 he was a member of the 22nd Engineer Regiment of the New York National Guard and was a member of its track team. His wife, Mabel Hills; a daughter, Florence Hills, and two sons, Edward W. Hills, Jr. and James Hills, survive.

AMONG THE COMPANIES YOU BUY FROM

Baltimore, Md.—Ward Leonard Electric Co. Durling Electric Co., 2002 St. Paul Street, has been appointed representative in Virginia, south central Pennsylvania, Maryland, except for the Washington area, and Delaware south of Wilmington.

San Mateo, Calif.—Blaw-Knox Company. John R. Gregory has been appointed Pacific Coast representative for the company's steel plant sales.

Dunellen, N. J.—Ransome Machinery Co., subsidiary of Worthington Pump & Machinery Corp. Allan B. Kime has been named eastern regional manager in charge of the sale of Ransome positioning and turning roll equipment.

Pittsburgh, Pa.—Columbia Chemical Division of Pittsburgh Plate Glass Co., and Southern Alkali Corp. W. I. Galliher has been appointed executive sales manager of both units. Southern Alkali is a subsidiary of the Pittsburgh firm. Mr. Galliher will maintain headquarters at Fifth Avenue and B. I. I. field St.

Detroit, Mich.—The Boyer Campbell Co. John F. Phillips has been appointed director of sales, and Kenneth D. McLetche, sales manager of the Industrial Equipment Division.

Milwaukee, Wis.—Burlington Instrument Co. Frederick A. Meyer has been appointed representative, with headquarters at 207 E. Michigan St. His territory will include the state of Wisconsin and the upper peninsula of Michigan.

Chicago, Ill.—Columbia Chemical Division, Pittsburgh Plate Glass Co. Robert M. Simpson has been appointed acting district manager of the Chicago territory.

Portland, Ore.—Wagner Electric Corp. Preston M. Postlethwaite has been named manager of both the electrical and automotive divisions of the company. He was formerly in the sales department of the Pittsburgh branch.

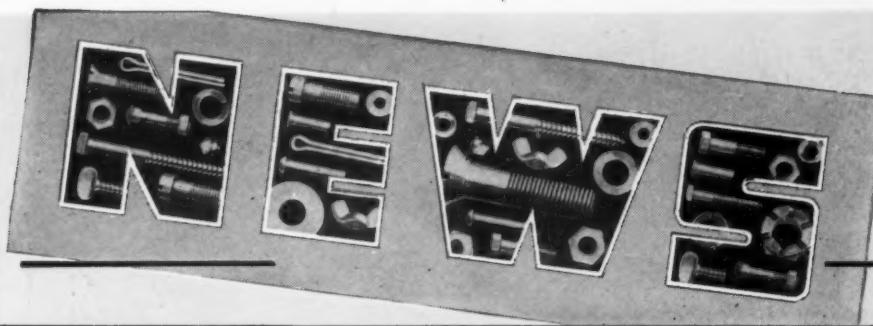
New York, N. Y.—Jack & Heintz Precision Industries, Inc. Robert O. Ohlendorf has joined the sales staff of the company, and will cover a sales territory which embraces the entire eastern seaboard. He will have his headquarters in New York.

Dallas, Tex.—Electric Machinery Mfg. Co. A sales office has been established at 2023 Jackson St., in charge of H. L. Renking, formerly manager of the Pittsburgh office.

New York, N. Y.—Monsanto Chemical Co. has moved its offices to 445 Park Avenue.

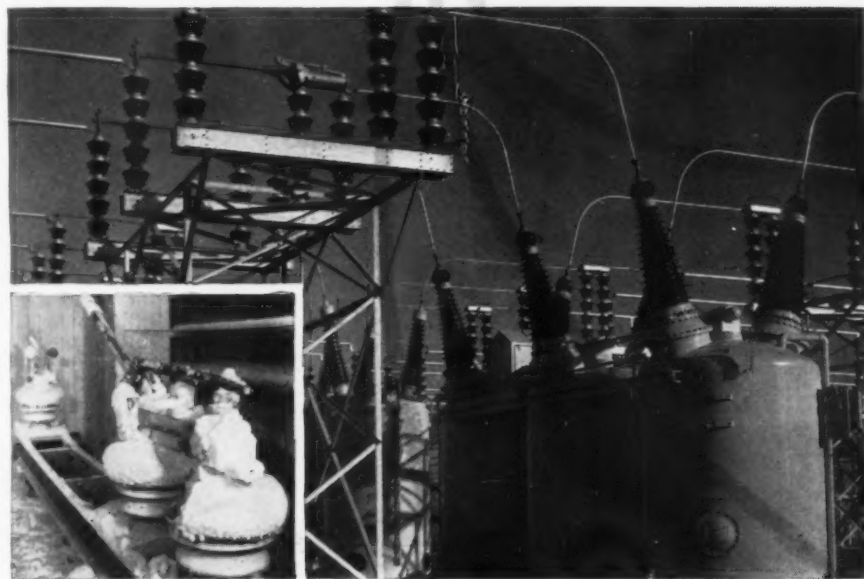
(Please turn to page 312)

HARPER fastening



IN ALMOST ANY APPLICATION!

Harper Fastenings of Non-Ferrous or Stainless Steel are Better than Common Steel



SILICON BRONZE PREVENTS "SEASON CRACKING" IN UTILITY POWER LINES

"Season Cracking" is the costly failure of unsuitable metals in power line fittings and fastenings because of seasonal temperature changes and exposure to weather. Experience has proved to Utility men that fastenings of silicon bronze resist cracking, hold securely and will not "freeze" from rust or corrosion. To reduce replacements in any outdoor application use Harper Silicon Bronze fastenings.

Left: A large installation of modern power line switches fastened with Harper Silicon Bronze Bolts.

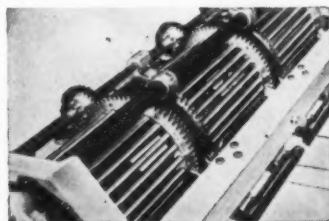
BRONZE BOLTS PROTECT AGAINST UNDERGROUND DAMP



Junction boxes and pull boxes containing lights, wiring and switches used in underground subway and highway installations must be opened periodically for inspection and repairs. A large manufacturer of such equipment found that common steel bolts used to secure the box covers would corrode quickly in the continually moist environment and "freeze," necessitating costly delays and frequent replacement. By using Harper bronze bolts corrosion is prevented, covers easily removed and bolts reused.

STAINLESS FASTENINGS RESIST FRUIT ACIDS

A large manufacturer of fruit handling equipment faced a typical corrosion problem in a clever cherry stemming machine which he builds. Strength was required at strategic points, workability and flexibility in others. Acid corrosion resistance was essential, of course, in all parts to counteract the strong fruit acids. The forward-thinking manufacturer specified Harper stainless steel for the many bolts, nuts, washers, rivets, wing nuts and set-screws used to provide adequate mechanical properties and corrosion resistance for trouble-free operation, low cost maintenance and long-life of his product.



Brass, Bronze, Monel Metal, Stainless Steel

Harper Everlasting Fastenings are made from Brass, Naval Bronze, Silicon Bronze, Monel Metal, Stainless Steels . . . none from common steel.



The H. M. HARPER COMPANY

2606 FLETCHER STREET
CHICAGO 18, ILLINOIS

Branch Offices—New York City, Philadelphia, Los Angeles, Milwaukee, Cincinnati, Dallas, Cleveland

HARPER
Chicago

HARPER SPECIALIZES IN EVERLASTING FASTENINGS

TIGHT VALVES Save Fuel!



Fig. 1938
Steel Gate

Vitally Important—FOR KEEPING PRODUCTION Up..... COSTS Down

Many elements in a piping system may contribute to ultimate fuel waste. Insulation may be inadequate. Piping and fittings may be at fault. Or valves may fail to hold tight . . . resulting in leakage of steam, air, or water, and in lowered pressures, all of which may mean excessive fuel consumption.

Lunkenheimer Valves—whether of steel, iron, or bronze—are quality built to stay tight, over years of service. They afford constant, dependable protection against leakage. Simplicity of design and a minimum of working parts assure extra long life and easy, economical maintenance.



We have prepared a chart, showing in dollars-and-cents figures, what leaky valves can waste in steam, water, and air. For a copy, write—The Lunkenheimer Co., Cincinnati 14, Ohio. U. S. A.

Your LUNKENHEIMER DISTRIBUTOR

is fully equipped to help you solve problems of valve maintenance or operation. Call on him . . . you'll profit from his better valve service!

LUNKENHEIMER VALVES

BRONZE, IRON, STEEL, AND CORROSION RESISTANT ALLOY VALVES
AIR DEVICES, LUBRICATORS, AIRCRAFT FITTINGS

North Chicago, Ill.—Vascoloy - Ramet Corp. has announced increased sales and service representation as follows: B. J. Naden to Cleveland; J. M. Kinney to Toledo; Frank Scheffler to Kansas City; and Dean R. Cline to the Chicago area.

Westfield, N. Y.—Ajax Flexible Coupling Co., Inc. Robert G. Cady has been appointed manager of the materials handling division.

Tulsa, Okla.—The B. C. Ames Co. The Marshall Supply & Equipment Co., 109 West First St., has been appointed exclusive sales representatives in the state of Oklahoma, handling the Ames line of micrometer dial gauges and micrometer dial indicators.

Newark, N. J.—The American Welding & Manufacturing Co. Frank J. Shanaberg has been named eastern district sales manager, and the eastern district offices have been moved to The Industrial Building, 1060 Broad St. They were formerly located in New York city. The territory embraces most of New England, Eastern New York and Pennsylvania and Washington, D. C.

Salem, Mass.—Radio Tube Division, Sylvania Electric Products, Inc. Wm.



Wm. M. Maguire

M. Maguire has been transferred from the Salem plant to the Distributor Sales Department. He will serve as products specialty salesman in cooperation with sales division managers and distributors in the eastern half of the United States.

Kansas City, Mo.—General Electric Co. Kenneth D. Sargent has been named district representative for the company's wiring devices in the central district.

Welland, Ont.—Atlas Steels Ltd. Edward P. Geary, who recently closed out Geary Stainless Steel Co., Baltimore, Md., has been elected vice-president and general sales manager.

New London, Conn.—Whitton Machine Co. Thomas G. Hart has been appointed general sales manager in charge of sales of steam turbines, lathe chucks, centering machines and gear cutters.

Cleveland, O.—General Electric Co. James A. O'Donnell has been named district representative for the company's conduit products in the Great Lakes district.

(Please turn to page 314)

GET GASKETS QUICKLY

Choose from 5 basic types of standardized materials

For fast delivery of the right gasket, depend on Armstrong's wide-range line of standardized sealing materials. Five basic types, available in 70 different formulations, provide a planned range of properties that can satisfy almost any gasketing specification.

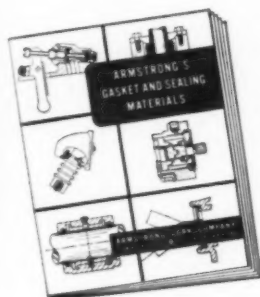
By ordering these performance-proved materials, you avoid production delays, eliminate costly special compounding, and minimize purchasing time.

Consult an Armstrong representative for unbiased recommendations based on 35 years of gasketing research and experience. Or send us details of your specific application today.



SEND FOR FREE BOOKLET

New, 20-page 1947 edition of "Armstrong's Gasket and Sealing Materials" includes specification data on more than 40 Armstrong's resilient sealing materials and also helpful hints on their proper application. For your copy, address Armstrong Cork Company, Gaskets and Packings Department, 7209 Arch Street, Lancaster, Pennsylvania.



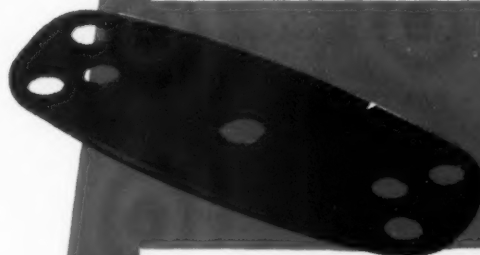
ARMSTRONG'S SYNTHETIC RUBBERS

19 precisely compounded materials. Available molded, die-cut, lathe-cut, or turned.



ARMSTRONG'S FIBER SHEET PACKINGS

2 types. No. 1242 and No. 143. Both are tough, resilient, uniform. No. 143 is dense, corrosion resistant.



ARMSTRONG'S RAG FELT PAPERS

2 types. Dry or impregnated. Available die-cut to specifications or in sheets, rolls, strips, and laminations.



ARMSTRONG'S CORK COMPOSITIONS

28 low-cost materials affording a broad choice of densities, degrees of compressibility, and binders.



ARMSTRONG'S CORK-AND- SYNTHETIC RUBBERS

19 compositions offering true compressibility, extra resilience, high tensile strength, imperviousness to fluids.

ARMSTRONG'S GASKETS • PACKINGS • SEALS



No matter how good it looks, a friction tape that won't stay put is of little value. That's why "adhesion" is so important in friction tape and why the A. S. T. M. has developed carefully-controlled test procedures to determine this all-important quality. PANTHER and DRAGON Friction Tapes comply with these and other requirements of A. S. T. M. and Federal specifications.

But the most important factor of all is user satisfaction. PANTHER and DRAGON Friction Tapes are "tops" here, too. You can handle them on a pole top in mid-winter or in the blistering heat of a boiler room and expect them to stay put.

PANTHER and DRAGON Friction and Rubber Tapes give results that produce repeat orders. They are made by a company in the insulation business since 1878 and sold only through recognized independent wholesalers. Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pennsylvania.



Panther and Dragon
friction and rubber tapes

Fort Worth, Tex.—Allis-Chalmers Manufacturing Co. Karl J. Ratliff has been appointed resident representative for the general machinery division. He will represent the company in Tarrant County.

Fort Worth, Tex.—Salem Engineering Co. The company has opened an office at 512 Sinclair Building. Harris Pruitt, who has been directing sales in the Southwest, will be in charge of all activities in that area.

Coatesville, Pa.—Lukens Steel Co. W. E. Mullestein has been named manager, field sales, for the parent company and two subsidiaries: By-Products Steel Corp. and Lukenweld, Inc. He succeeds Arthur J. O'Leary, recently deceased.

Newark, Del.—Continental-Diamond Fibre Co. Harry M. Dexter, formerly in charge of the Cleveland sales office, has been named sales manager of the company. He has transferred his activities to the main office.



G. K. Whyte

St. Louis, Mo.—Chase Bag Co. G. K. Whyte, for the past several years connected with the St. Louis sales department, has assumed the duties of sales manager of the branch. Mr. Whyte has been with the company since his graduation from the University of Illinois.

Chicago, Ill.—Dravo Corporation. A sales and service office has been opened at 208 S. LaSalle Street. T. W. Eshbach is in charge of the office.

Detroit, Mich.—Kennametal Inc. Richard H. Oberholtzer has been appointed representative for the Detroit area and will work out of the company's offices at 5531 Woodward Ave.

Memphis, Tenn.—Ford Motor Company. T. J. O'Neil formerly sales district manager at Indianapolis has been appointed manager of the Memphis district.

Beverly, Mass.—American Nickeloid Company. A New England sales office has been established here, with J. R. Schoellhorn in charge.

Chicago, Ill.—Baker Industrial Truck Division, Baker-Raulang Co. J. G. Green has been appointed mid-western representative with offices at 407 South Dearborn Street.

(Please turn to page 316)

**The qualities you look for
in high grade fasteners are
assured by the**

KAUFMAN

**DOUBLE
EXTRUSION**

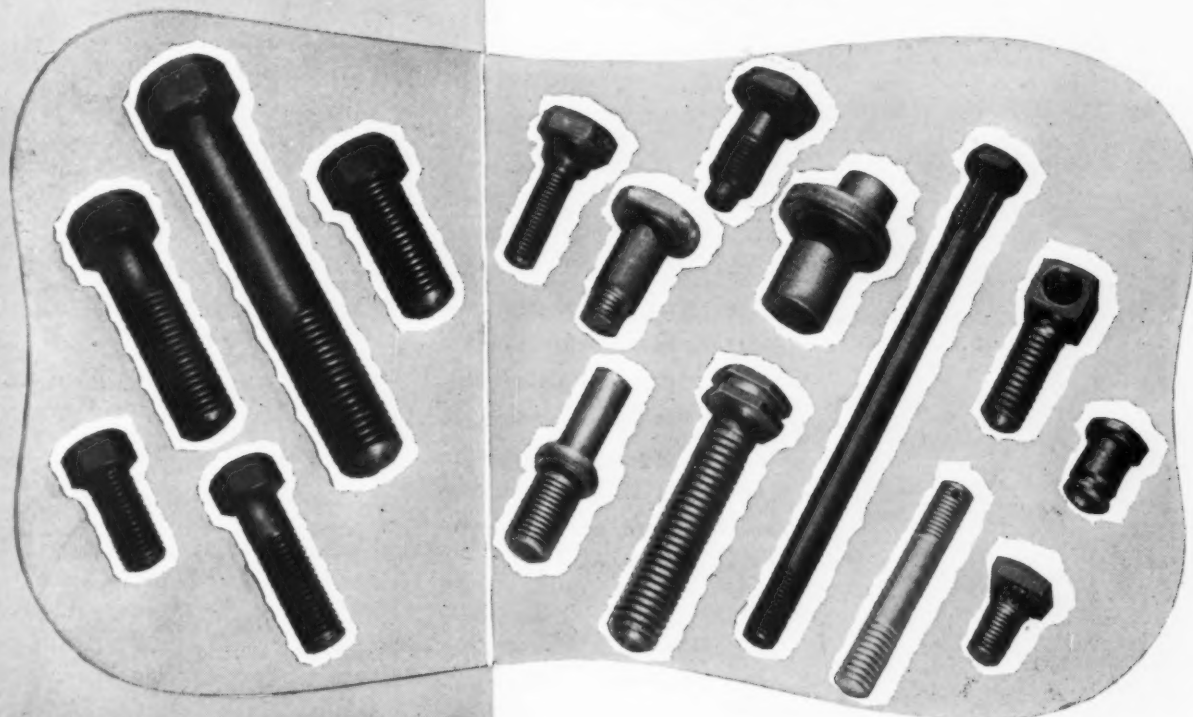
PROCESS

used in producing

CLEVELAND FASTENERS

**Accurate forming
to close tolerances
Uniform lead on threads
Threads concentric with
shank
Class 3 fit
Correct heat treatment
Maximum strength**

Build extra dependability into your products by choosing carefully your threaded fastener supply, whether standard or your own special design. High carbon or nickel steel cap screws and "specials" are made expertly here where the Kaufman Process was originated. Write for folder—"This is the Kaufman Process."



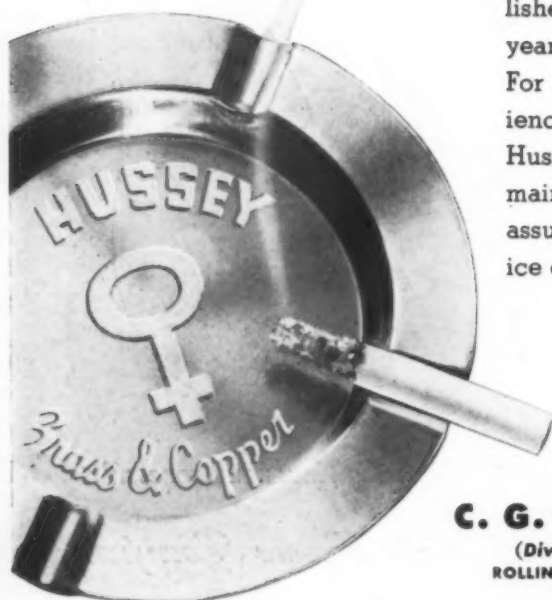
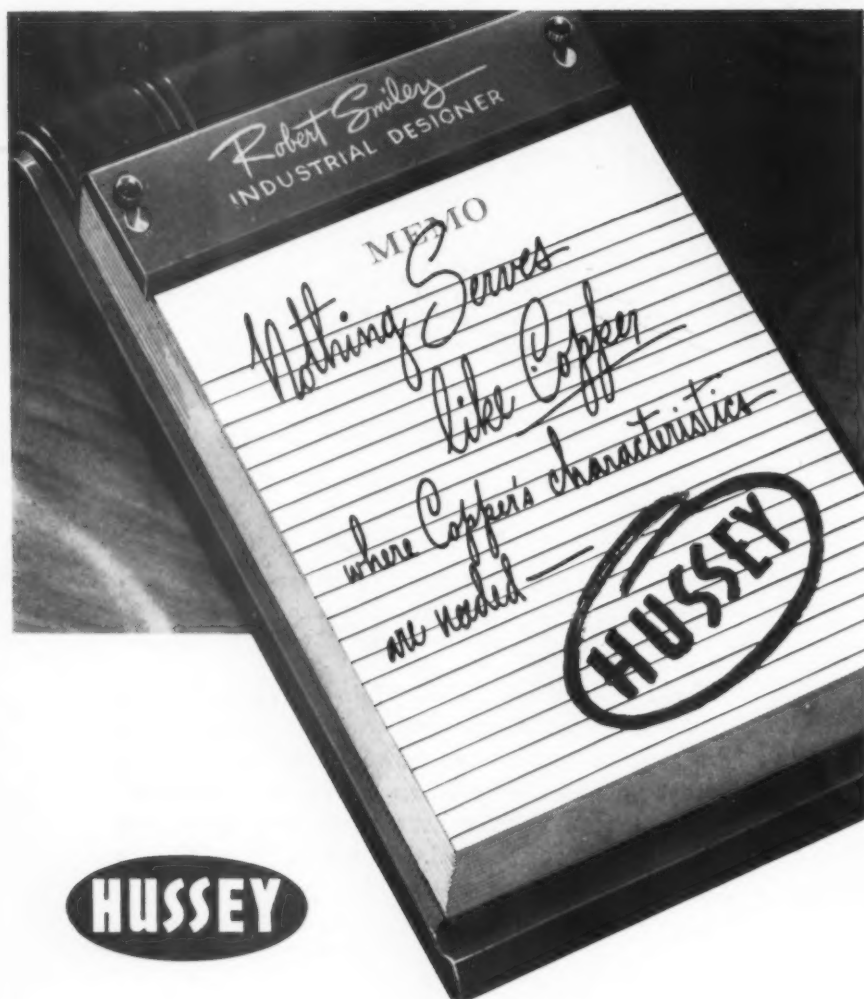
CLEVELAND
Top Quality
FASTENERS

Write for folder—"This is the Kaufman Process."

The Cleveland Cap Screw Company

2917 EAST 79TH STREET • CLEVELAND 4, OHIO

MADE BY THE ORIGINATORS OF THE KAUFMAN PROCESS FOR GREATER STRENGTH AND ACCURACY



The versatile, lifetime characteristics of genuine Hussey Copper has been firmly established through nearly 100 years of service to industry. For your purchasing convenience, warehouse stocks of Hussey Copper and Brass are maintained in key cities to assure prompt, accurate service on your requirements.

C. G. HUSSEY & CO.

(Division of Copper Range Co.)
ROLLING MILLS AND GENERAL OFFICES
PITTSBURGH, PA.

Hussey Warehouses Carry Stocks of Copper & Brass Products for Prompt Delivery

South Bend, Ind.—C. K. Turk Corporation. Thomas Ragsdale has been named sales engineer for the mid-west area.

Chicago, Ill.—Mid-States Equipment Corp. Marshall E. Neil has been appointed general sales manager.

Indianapolis, Ind.—South Wind Division, Stewart-Warner Corporation. Key W. Ryan has been appointed supervisor of sales and service for the South Wind "Sealed Heat" residential heating unit.

Los Angeles, Calif.—Federal Products Corporation. Ralph H. Chapman, formerly of the Detroit office, is now in charge of the Los Angeles office which has moved to Room 214, 1489 West Washington Blvd.

Hastings, Mich.—E. W. Bliss Co. The Lansing district sales office has been moved to the Bliss plant here, from which point sales for the state of Michigan outside the Detroit district will be handled.

Vineland, N. J.—Kimble Glass Division, Owens-Illinois Glass Co. The following division sales managers have been appointed: Edwin J. Rhein, scientific division; E. B. Dennis, Jr., container and accessories division; Edward W. Charlesworth, tube and rod division.

Los Angeles, Calif.—Ellinwood Industries. Alfred T. Alden has been appointed general sales manager. He was formerly president of the Pacific Chemical Co.

Detroit, Mich.—The Aro Equipment Corp. J. C. Hurley has been named manager in charge of original equipment sales, with headquarters at 908 Stephenson Building.

New York, N. Y.—DeVilbiss Co. The company's sales, engineering and service branch is now located at 460 Fourth Avenue.

Los Angeles, Calif.—H. K. Porter Co., Inc. Harold A. Hintz has been appointed Pacific Coast sales manager, with offices in the Petroleum Building.

Philadelphia, Pa.—Pennsylvania Salt Manufacturing Co. Joseph J. Duffy, Jr. has been promoted to manager of sales of the special chemicals division.

Santa Clara, Calif.—Pittsburgh - Des Moines Steel Co. C. A. Fegtly has been appointed manager, and F. W. De Klotz sales manager of the Pacific Coast division.

Detroit, Mich.—Hercules Powder Co. A new sales office for the Naval Stores department has been opened in the Fisher Building, Room 628. Robert S. Glover, Jr., will be manager of the office and supervise the sales of rosin and terpene derivatives in a territory comprising the lower peninsula of Michigan and the state of Ohio.

(Please turn to page 320)



THIS MERGER WAS A "NATURAL"

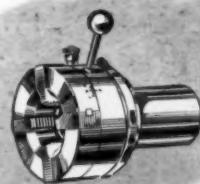
In 1944, "Greenfield" took one of the most important steps in its 75 years of pioneering service in the threading tool field. It acquired The Geometric Tool Company of New Haven as a major subsidiary. Geometric has a reputation nearly as old and as famous in its field of Self-Opening Die Heads and Collapsing Taps as that

of "Greenfield" in the solid threading tool field.

The two go together naturally to complete a line of threading tools and gages for every size and type of job. It adds Geometric's 54 years of know-how to "Greenfield's" 75 years to make a total of 129 years of *pioneering research available from one source.*



This simple, rugged and precise Style D Self-Opening Die Head is one of Geometric's major contributions to the complete "Greenfield-Geometric" line of threading tools and gages. It is essentially designed to cut standard threads even though they may be of large diameter and coarse pitch.



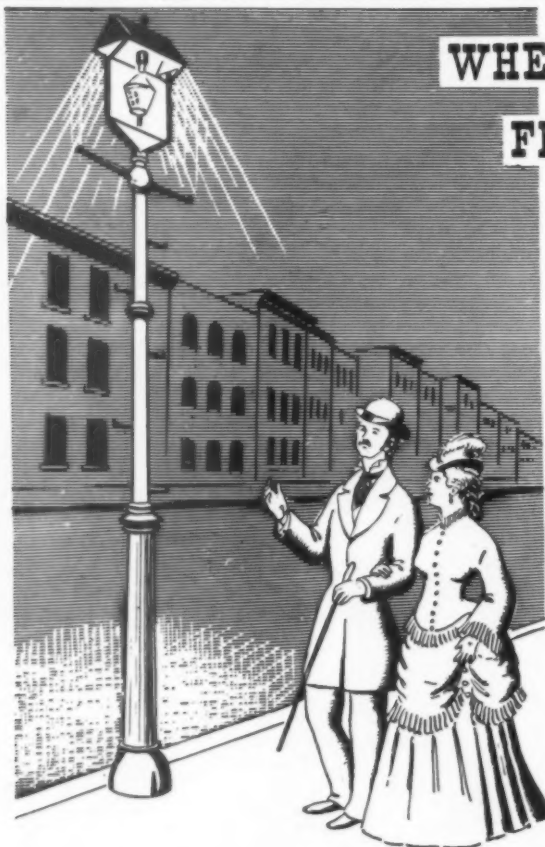
GREENFIELD

TAP AND DIE CORPORATION
Greenfield - Massachusetts

THE GEOMETRIC TOOL COMPANY

New Haven, Connecticut
A DIVISION OF DECAPOLE TOOL WORKS CORPORATION

BACK IN THE 1880'S

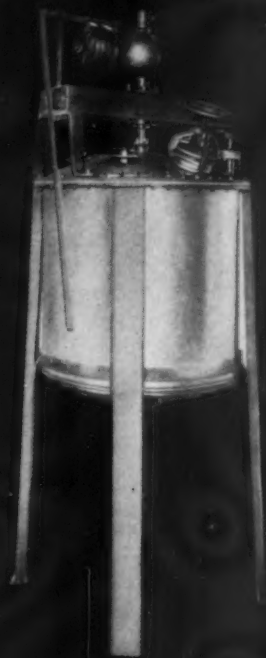
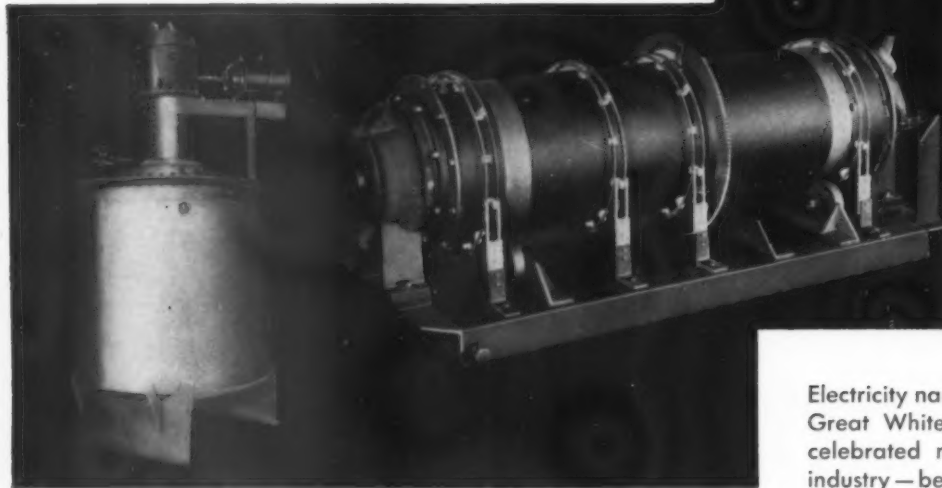


WHEN ELECTRIC LIGHTS

FIRST APPEARED ON BROADWAY

KOVEN

WAS MAKING INDIVIDUALIZED
CHEMICAL EQUIPMENT



PLANTS:
Jersey City, N.J. Dover, N.J.

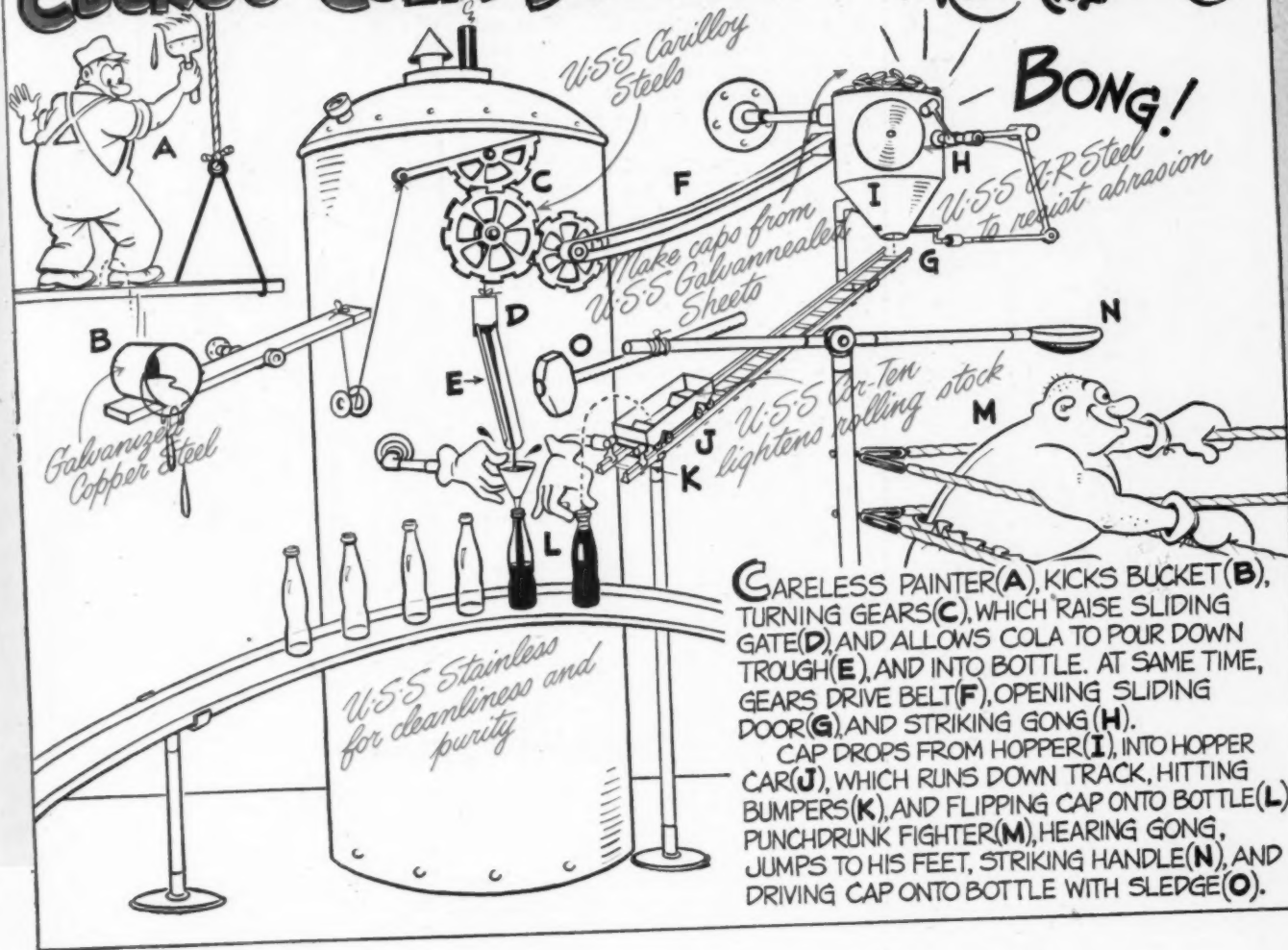
L.O. KOVEN & BRO. INC
154 OGDEN AVE. • JERSEY CITY 7, N. J.

Electricity named a famous thoroughfare "The Great White Way". KOVEN is an equally celebrated name—to men in the chemical industry—because KOVEN has been relied upon since its earliest days for individualized chemical equipment designed to meet your particular requirements. For specific jobs of any size KOVEN can produce dependable, efficient units that speed production and cut costs. Without obligation a KOVEN consultant will discuss your problem with you. Call or write KOVEN today.

KOVEN equipment in all commercial metals and alloys includes: pressure vessels, extractors, mixers, stills, condensers, tanks, chutes, containers, stacks, coils.

KOVEN FOR INDIVIDUALIZED CHEMICAL EQUIPMENT SINCE 1881

CUCKOO COLA BOTTLER - BY RUBE GOLDBERG.



WE doubt if Mr. Goldberg's suggestion for bottling cola would prove very practical, and some of his applications may seem rather far-fetched. But there is one sound and proved fact brought out by the illustration . . . only steel can do so many jobs so well.

Where can you find a material that can equal steel's toughness for lightweight construction? What other material can withstand the severe range of temperatures . . . resist shock, corrosion, severe

bending, and abrasion as well as steel?

Only steel can be produced in such an extreme variety of alloys, forms, and finishes. It can be punched, riveted, welded to perfection. It can be polished to mirror surfaces—etched, painted, or permanently coated with porcelain enamel. It can be

drawn, formed, forged, machined on a mass production basis.

Our steel specialists will be glad to assist you in applying special purpose U-S-S Steels to your products to help make them more durable, more efficient, less costly to manufacture, and easier to sell.*

CARNEGIE-ILLINOIS STEEL CORPORATION

Pittsburgh and Chicago

COLUMBIA STEEL COMPANY, San Francisco, Pacific Coast Distributors
TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham, Southern Distributors
UNITED STATES STEEL SUPPLY COMPANY, Chicago, Warehouse Distributors
UNITED STATES STEEL EXPORT COMPANY, New York

7-959

Have you explored the possibilities of these special purpose U-S-S Steels?

- U-S-S STAINLESS AND HEAT-RESISTING STEELS to assure high resistance to corrosion and heat, and to reduce weight.
- U-S-S CARILLOY STEELS—Alloy steels for the special jobs of industry.
- U-S-S HIGH STRENGTH STEELS to resist atmospheric corrosion, to increase strength without adding weight or to maintain strength with reduced weight.
- U-S-S COPPER STEEL to give at least twice the atmospheric corrosion resistance of regular steel at little additional cost.

- U-S-S ABRASION-RESISTING STEEL to combat wear and friction.
- U-S-S HOT-ROLLED AND COLD-ROLLED STEELS to provide the basic advantages of steel, plus maximum economy in each job.
- U-S-S PAINTBOND—A galvanized, Bonderized sheet that permits immediate painting and holds paint tighter.
- U-S-S VITRENAMEL—Sheets designed especially for porcelain enameling.
- U-S-S ELECTRICAL SHEETS for motors, generators and transformers.

IT TAKES SCRAP TO MAKE STEEL . . . PLEASE TURN YOURS IN!

9 times out of 10
STEEL
will do it better



UNITED STATES STEEL



Schieren belt on the pulleys of your machines gives you maximum production power with minimum "time out" for maintenance.

Here's why:

BETTER PULLEY GRIP—MORE RPM — The uniform, clean, full grain surface of Schieren belt assures maximum coefficient of friction — delivers more producing speed and power.

LESS STRETCH—LESS MAINTENANCE — Tests have shown that Schieren belt has less than half the stretch allowable under government specifications. In addition, Schieren belt's higher tensile strength and stronger laps and plies provide greater overload capacity and longer belt life.

To improve and protect your production rates, put Schieren belt on your machine pulleys.

Write for further information on leather belting, packings or leather specialties of all types.

SC-12

CHAS. A. SCHIEREN CO.

31 FERRY ST., NEW YORK 7, N. Y.
60 Front Street W., Toronto, Ont.

Tanners and Manufacturers Since 1848

Branch Offices in Chicago, Dallas, Denver, Detroit, Lowell, Newark, New York, Philadelphia, Pittsburgh, Salt Lake City

New York, N. Y.—United States Rubber Company, tire division. A. C. Westlund has been appointed manager, sales production coordination department. He was formerly manager of business development activities of the tire division.

New Orleans, La.—General Box Company. George H. Voelker has recently been designated the Latin American representative for the company. He will retain his office here where he has been located for several years as sales manager of the New Orleans division.

Los Angeles, Calif.—Kennametal, Inc. Charles Herbert Bodner has been named tool engineer and representative in the Los Angeles area, working out of the company's office at 3715 Santa Fe Ave.

Detroit, Mich.—Elco Lubricant Corp. W. J. Allard has been appointed Detroit district manager.

Houston, Tex.—Thermex Division of the Girdler Corporation. A southwestern district office has been established at 5614 Telephone Road. James R. Chapman has been appointed district representative.

New York, N. Y.—Commercial Filters Corporation has opened a branch office at Room 1501, 92 Liberty St. James M. Morrison is New York district manager, assisted by Harold C. Corwin.

Philadelphia, Pa.—Kennametal, Inc. George E. Smith has been appointed representative and engineer in the Middle Atlantic district, with offices at 301 North Broad Street.

Boston, Mass.—Monsanto Chemical Company. Chester L. Jones has been appointed sales manager of the company's protective coatings department. He was formerly manager of the product department of the plastics division. His new headquarters will be with the company's Merrimac division, in this city.

Pittsburg, Kans.—McNally Pittsburg Foundries, Inc. Desmond Gamble has been appointed sales representative in charge of all territory in the western half of the country. He was formerly office manager.

INDUSTRIAL DEVELOPMENTS

National Supply Company has constructed six oil storage tanks and has them filled with 270,000 gallons of fuel oil at its Spang-Chalfant Division pipe mill in Etna, Pa. Equivalent to 36 million cubic feet of natural gas, the fuel store is designed to prevent a recurrence of the shut-down that occurred last year due to the natural gas shortage, and which cost the company one half of its normal production of pipe for three months.

(Please turn to page 322)

IT CAN HAPPEN

in YOUR plant



IF YOU DON'T SPRINKLE

QUIK-SIL

TRADE MARK

The Modern
**OIL AND GREASE
ABSORBENT**

ON OILY, GREASY FLOORS

Now . . . with production volume vitally important you can't afford to gamble with lost manpower hours from floor slipping accidents. QUIK-SIL dries oil and grease with amazing speed. Gives safe footing for workers and makes floors safer for power trucking. Increases leather belting life. Won't harm shoe soles and heels, clothing, hands, floor surfaces. Makes floors easier to clean.



Approved by Underwriters Laboratories Inc., which is sponsored by National Board of Fire Underwriters.

**Make Your Own Test with
FREE SAMPLE**

Just sprinkle QUIK-SIL on an oily spot and note its quick-drying action. Then test the surface for surer footing. Write now!

TROJAN PRODUCTS DEPARTMENT
The Diversey Corporation
53 W. Jackson Blvd., Dept. P-9, Chicago 4, Ill.

JOHNSON BRONZE

GP

GENERAL PURPOSE
BEARINGS

*Over
850
Standard
Stock Sizes*

*Write for
FREE
Catalogue*



Quick Delivery

● Delays in securing replacement parts are expensive luxuries. Idle men and machines because of breakdowns are items few companies can afford. When it's bronze bearings you need there is no excuse for waiting. Simply call your local Johnson Bronze warehouse or your local Johnson Bronze Distributor.

Be sure to specify Johnson G. P. Bearings. From our list of over 850 Standard Stock sizes you can buy exactly according to your needs. Every bearing is completely machined, ready for immediate installation. Alterations such as oil holes, grooves or slots are easily, economically added.

The next time you need cast bronze bearings compare your required sizes with our complete stock list. Give us the opportunity to prove our excellent service. The bearings will prove their quality through performance.

JOHNSON

SLEEVE BEARING

450 S. MILL STREET



BRONZE

HEADQUARTERS

NEW CASTLE, PA.

GRIP!



PARKER VISES give you that first essential—G-R-I-P—the powerful grip that “welds the work to the bench”. In-built features—from our years of skill and experience—make this power productive for you. Try Parkers where other vises have been found wanting. Sold only through leading distributors. The Charles Parker Company, Meriden, Conn.

FEATURES

- Tool steel jaws—renewable.*
- Solid cast underportion—no slack.*
- Oversize steel screw, malleable iron nut.*
- Tension spring handle.*
- Swivel base, 360° swing, has positive auto-type lock.*

PARKER VISES

America's First Vise Maker



Canvas Fabricators, Inc., 651 W. Fulton St., Chicago 6, is the new corporate name of the former Canvas Products Co.

Solvay Sales Corporation, New York, N. Y. have moved the New Orleans and Houston branch offices into new quarters in their respective cities. The New Orleans branch is now located at 1107 Pere Marquette Building, Baronne St. The Houston office is established at 1313 City National Bank Building, 921 Main St.

American Steel and Wire Company will extend their billet heating furnaces at Joliet, Ill. to accommodate an increased number of billets, necessary to compensate for the proposed increase in speed of the plant's Number 1 and Number 2 continuous rod mills. The furnaces will be reconstructed by Rust Furnace Company.

Induction Heating Corp., has moved to its recently completed headquarters at 181 Wythe Ave., Brooklyn 11, N. Y.

Koppers Co., Inc., Pittsburgh, Pa. has appointed Brig. Gen. Hugh C. Minton as vice-president. He was named production manager in May.

The strip annealing capacity at the Indiana Harbor, Ind., mill of The Youngstown Sheet and Tube Company, will be increased when 12 annealing furnaces are remodeled by Rust Furnace Company, Pittsburgh, Pa., under a contract recently announced. The furnaces to be remodeled were built by Rust in 1937.

Brooks & Perkins, Inc., a new corporation, Detroit, Mich., has acquired and will continue the business of the former Brooks & Perkins, fabricators of magnesium parts and products. E. Howard Perkins is president.

Air Reduction Sales Company has opened a new acetylene plant at Dayton, O. R. K. Haygood is the plant superintendent.

Hobbs Glass Limited has been named distributor for Pittsburgh Plate Glass Co. paints in Canada. All paints distributed through the company will be manufactured according to Pittsburgh Plate formulae in the plants of the Murphy Paint Co., Ltd., Montreal. A \$1,000,000 Murphy Co. plant at Long Branch, near Toronto, designed and constructed specifically for the production of Pittsburgh paints, recently commenced production.

Federated Metals Division, American Smelting and Refining Company, recently put into full operation at Los Angeles, Calif., its new plant for production of intermediate zinc. The plant, constructed at a cost of nearly \$200,000, includes the latest handling equipment and improved smelting furnaces which use horizontal type retorts. A feature of the process is the pall-tizing of the zinc slabs by casting specially shaped slabs for the bottom-pieces.

(Please turn to page 324)



What do Fasteners Really Cost?

*There's more to fastener cost than just price.
Lots more. Personally . . .*

I look for all 8
to get **t.f.e.**

True
Fastener
Economy

It is the many costs of using a fastener that count . . . not just the initial price. True Fastener Economy is the lowest total cost for fastener selection, purchase, assembly and performance.

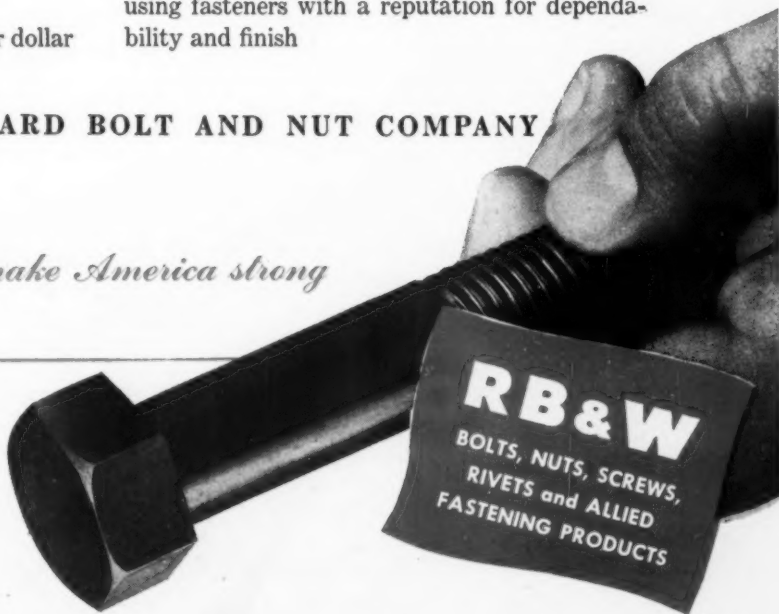
YOU GET **t.f.e.** WHEN YOU

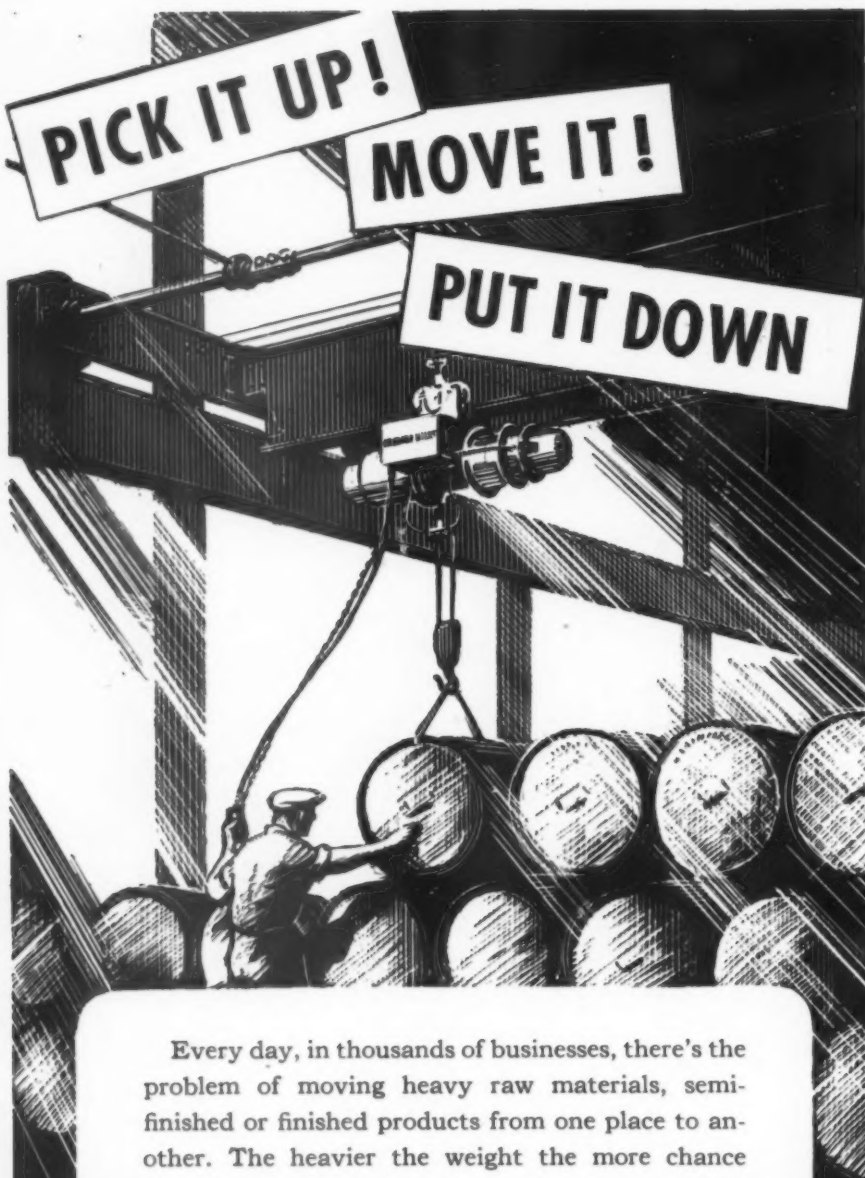
1. Reduce assembly time to a minimum by savings through use of accurate and uniform fasteners
2. Make your men happier by giving them fasteners that make their work easier
3. Reduce need for thorough plant inspection, due to confidence in supplier's quality control
4. Reduce the number and size of fasteners by proper design
5. Purchase maximum holding power per dollar
6. Simplify inventories by standardizing on fewer types and sizes of fasteners
7. Save purchasing time by buying larger quantities from one supplier's complete line
8. Contribute to sales value of final product by using fasteners with a reputation for dependability and finish

RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY

*102 years making strong
the things that make America strong*

Plants at Port Chester, N. Y., Coraopolis, Pa., Rock Falls, Ill., Los Angeles, Calif. Additional sales offices at Philadelphia, Detroit, Chicago, Chattanooga, Portland, Seattle. Distributors from coast to coast. By ordering through your distributor, you can get prompt service for your normal needs from his stocks. Also—the industry's most complete, easiest-to-use catalog.

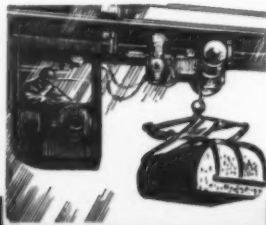




Every day, in thousands of businesses, there's the problem of moving heavy raw materials, semi-finished or finished products from one place to another. The heavier the weight the more chance there is to waste money, time and manpower. Only the most efficient crane will do.

Shepard Niles, America's oldest builder of electric cranes and hoists has a crane for every purpose and every weight of lift. With over 5,000 styles and sizes for selection, there's a type to fit your needs.

The experience we have gained in installing cranes of every type is available to you without obligation. Ask a Shepard Niles engineer to help you improve your material handling.



Shepard Niles
CRANE & HOIST CORPORATION

Thousands of Shepard Niles electric hoists are giving continuous dependable service. There's a style and size to fit your problem of lifting, moving and depositing loads of 1/8 to 20 tons. Ask Shepard Niles engineers to recommend the style best suited.

Merritt-Monsanto Corp. is the new name of the Merritt Engineering and Sales Co., Lockport, N. Y. The organization, which manufacturers veneer and plywood-making machinery became a part of Monsanto Chemical Company in 1944.

Union Steel Castings Division of Blaw-Knox Co., Pittsburgh, Pa. has advanced S. J. Moran to the position of works manager. J. L. Daugherty has been appointed to succeed him in the position of assistant treasurer and production manager.

The Arabol Manufacturing Co., New York, N. Y., has acquired the St. Louis Chemical & Manufacturing Co., 2500-2506 Texas Ave., St. Louis, Mo. This will be operated as an adhesives manufacturing plant. The new addition to the company's branch offices and manufacturing plants will serve both national customers and those in the St. Louis and adjacent areas.

Eli Round, fire weld superintendent and member of the board of directors of **The Cleveland Chain & Mfg. Co.**, Cleveland, O., recently celebrated the sixtieth anniversary of his entrance into the chain industry. As a testimonial to Mr. Round, one hundred company officials and guests attended an anniversary dinner at the Wade Park Manor, Cleveland. Honors were shared by Mrs. Round, as the couple were also marking their fiftieth wedding anniversary.

The Wade-Morrison Company, a newly formed corporation with executive and sales offices at Cleveland, O., and factories at Columbus and Alliance, O., has begun manufacture of conveyor chains.

General Box Company, Chicago, Ill., has announced that their plant facilities for the manufacture of stitched panel crates have been increased. New equipment and experienced personnel have been added to one of their southern plant with immediate volume production of stitched panel crates scheduled.

The General Detroit Corp. has adopted the name "Quick Aid Fire Guard" for its complete line of portable fire extinguishers. The name will be applied uniformly to all types of portable fire extinguishers manufactured by the company and its subsidiaries.

The Arco Company, Cleveland, O., has announced completion of a new research laboratory building for organic coating research. The laboratory is equipped with more than 37 testing devices and allied accessory apparatus for producing a wide range of scientific analyses essential to product development, quality improvement and production control.

Pennsylvania Salt Manufacturing Co. of Washington, opened a new chlorine, caustic soda and DDT plant at Portland, Ore. on June 21. Production of these two chemicals by the Pacific Northwest operation has reached 200 tons a day.

(Please turn to page 326)

YOU furnish the steel

LYON

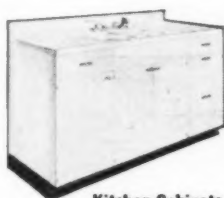
will make the product...



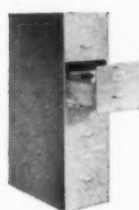
Adjustable Shelving



Lockers



Kitchen Cabinets



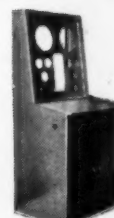
Filing Cabinets



Electrical Control Units



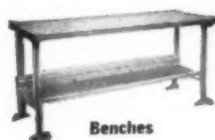
Home Appliance Stands



Testing Cabinets



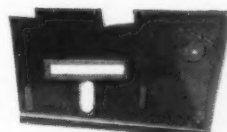
Water Cooler Containers



Benches



Gravity Conveyors



Special Parts



Office Equipment Stands



Storage Battery Racks

STANDARD LYON PRODUCTS

Here's how you can speed up plant expansion, boost production, or turn surplus steel inventory into cash.

(1) If you can supply us with 12 to 24 gauge sheet steel, we will supply you pound for pound with any selection of Lyon standard products now in production.

CONTRACT PRODUCTION OF SHEET STEEL ITEMS

(Gauges from 8 to 30)

(2) We will manufacture to your specifications, in Lyon Production run quantities, assemblies, sub-assemblies, or parts in gauges No. 8 and lighter up to No. 30.

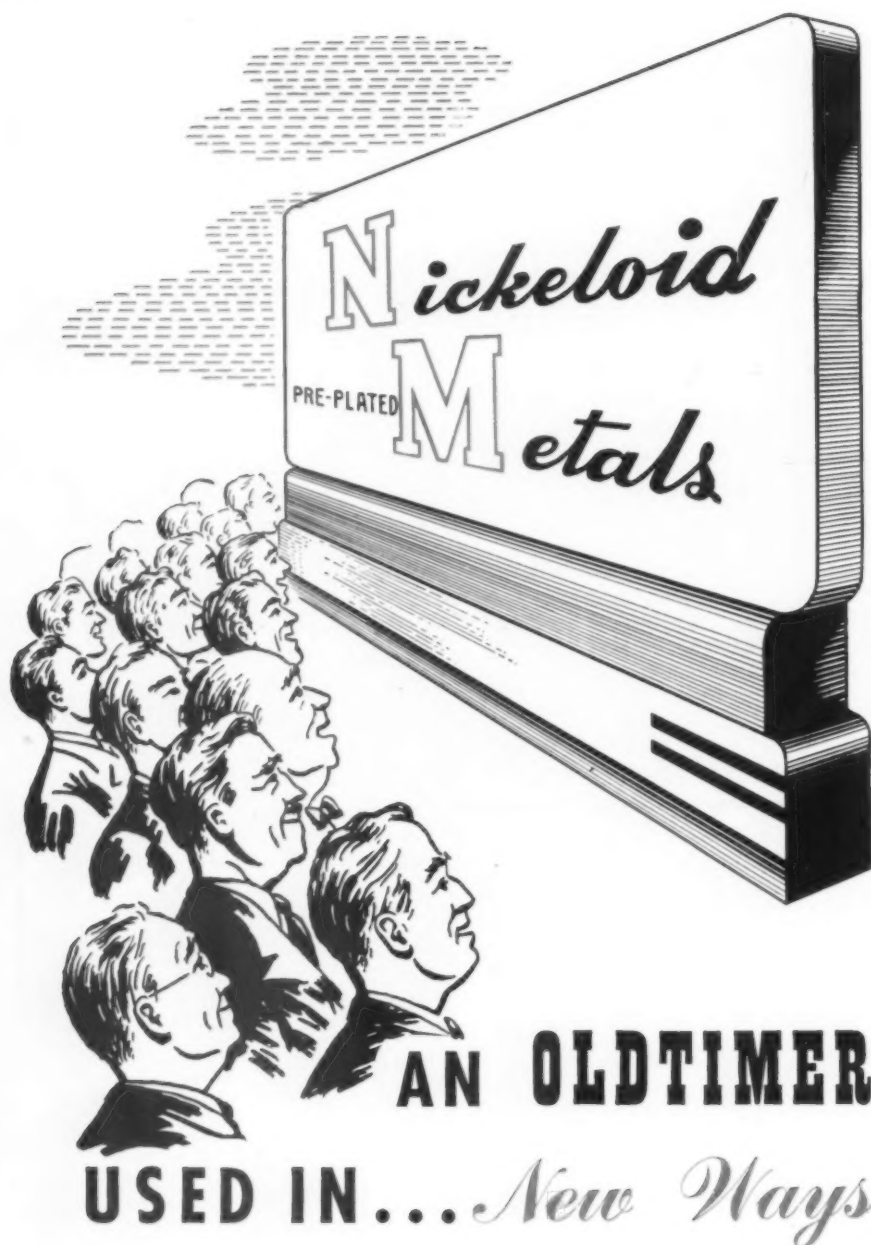
★ ★ ★

Write or phone your nearest Lyon dealer or district office.

LYON METAL PRODUCTS, INCORPORATED
General Offices: 933 Monroe Avenue, Aurora, Illinois
Branches and Dealers in All Principal Cities

A PARTIAL LIST OF LYON PRODUCTS

- | | | | | | | |
|------------------------|---------------------|-------------------|--------------------|--------------|-----------------|---------------------|
| • Shelving | • Kitchen Cabinets | • Filing Cabinets | • Storage Cabinets | • Conveyors | • Tool Stands | • Flat Drawer Files |
| • Lockers | • Display Equipment | • Cabinet Benches | • Bench Drawers | • Shop Boxes | • Service Carts | • Tool Trays |
| • Wood Working Benches | • Hanging Cabinets | • Folding Chairs | • Work Benches | • Bar Racks | • Hopper Bins | • Desks |
| • Economy Locker Racks | • Welding Benches | • Drawing Tables | • Drawer Units | • Bin Units | • Parts Cases | • Steels |
| | | | | | | • Sorting Files |
| | | | | | | • Ironing Tables |



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ON FABRICATION OF
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A factual, data-filled
brochure that may sug-
gest new production
economies to you.

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**AMERICAN
NICKELOID
COMPANY**

Established 1898

PERU 5, ILLINOIS

City Auto Stamping Co., Toledo, O., has begun a plant expansion program involving estimated expenditures of \$1,600,000 to enlarge its manufacturing facilities. Additional adjoining land was recently purchased to increase the company's property holdings to more than 25 acres.

R. B. Rogers Companies, Inc., has announced that its air conditioning division is moving from its New York plant to a larger, modern factory at Sanford, N. C. The sales department and engineering and research laboratory will remain in New York.

Kaiser-Frazer Corp. has purchased the K-F Foundry at Dowagiac, Mich., from the Round Oak Co., and has announced that the stove manufacturing portion of the business is for sale or lease.

Shell Chemical Corporation has announced plans for an expansion of synthetic ammonia production, at the company's plant at Shell Point, near Pittsburg, Calif. The move is directed toward an increase in capacity of about 50 percent over present production. Equipment for the increased capacity is scheduled to be in service in about a year.

Hercules Powder Co., will expand its operations at the Paper Makers Chemical department's Milwaukee, Wis., plant. The expansion involves the moving of casein blending and grinding operations from Chicago to the Milwaukee plant, which heretofore manufactured rosin size and other chemicals for the paper industry. The Chicago plant is being closed.

The Baker-Raulang Co., Cleveland, O., is erecting an addition to its No. 2 factory at 8200 Baker Ave. Present and future additions to the company's facilities are expected to increase productive capacity for material handling equipment approximately 50% over that operated during 1946.

Armstrong Cork Company, Lancaster Pa., has projected plans for the construction of new company laboratories, bids for the construction of which will be asked this fall. The new facilities will include the latest developments in industrial research and laboratory design and equipment.

The Arabol Manufacturing Co., New York, N. Y., adhesives manufacturers, have leased a three-story building at 1950 Sixteenth Street, San Francisco, Calif. Operations at the new location are planned for November 1.

LYON-Raymond Corporation, Greene, N. Y., celebrated with open house, June 28, at the plant and offices for local residents, employees, stockholders and business associates in observance of a triple anniversary occasion. It marked 25 years of administration under the management of George G. Raymond, president and treasurer; 60 years of incorporation of the company, and 107 years of manufacturing record.

(Please turn to page 328)

The Security Manufacturing Company

OF KANSAS CITY, MISSOURI

●...increased steel furnace drum production 733%



TECHNICAL SALES SERVICE REPORT



PROBLEM: To speed up cutting of sixteen gauge steel panels in the fabrication of furnace burner drum extensions. The hand cutting operation in use was slow, and resulted in poor welding fit-up. Also, slag removal and straightening of distorted panels resulted in excessive time loss.

SOLUTION: We recommended stack cutting with an oxyacetylene flame-cutting machine—the Airco No. 10 Planograph. This machine cut a stack of 25 panels in the time formerly required to shape 3 by hand—increasing steel furnace panel production 733%. Further, no time was lost in cleaning or straightening

...and welding fit-up was perfect. Since purchasing the Airco No. 10 Planograph, Security Manufacturing Company has found numerous other time-saving, cost-reducing cutting jobs around the shop, and, today, feels that this machine is one of its most profitable production tools.

A.O. Dodge
Airco Technical Supervisor

Airco's Technical Sales Division is at the call of all industry in applying Airco processes and products in the solution of their problems. If you have a metal working problem, ask to have a Technical Sales Division man call. Address: Dept. PR-6533, Air Reduction, 60 East 42nd St., New York 17, N. Y. In Texas: Magnolia Airco Gas Products Co., Houston 1, Texas.



AIR REDUCTION

Offices in All Principal Cities

TECHNICAL SALES SERVICE—ANOTHER AIRCO PLUS-VALUE FOR CUSTOMERS

JOHNSON XLO MUSIC SPRING WIRE is a leader in the manufacturing field for quality and quantity production of springs. It is available for repair and maintenance . . . in handy packages . . . 1/4 lb., 1/2 lb., and 1 lb. units . . . in full range of sizes from .003" to .200" dia. Every manufacturing plant needs it. Keep on hand a complete line to meet any emergency. Your mill supply house has stock now available.

If your distributor does not have Johnson Wire consult our nearest office.



JOHNSON

STEEL AND WIRE COMPANY, INC.
WORCESTER 1, MASS.
NEW YORK DETROIT AKRON CHICAGO LOS ANGELES TORONTO

You can do any of these jobs FASTER-EASIER-BETTER

with Strand Flexible Shaft Machines

Grinding • buffing • polishing • sanding
drilling • reaming • rotary filing • wire
brushing • screw driving • nut setting
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Strand machines provide PORTABLE rotary power at CONSTANT speeds with dependable results and less operator fatigue. Ruggedly built for years of steady use. Hundreds of attachments easily interchanged—125 types and sizes—vertical and horizontal models from 1/8 to 3 H.P.

DISTRIBUTORS IN ALL PRINCIPAL CITIES

Send for CATALOG showing complete line



M-5



N. A. STRAND & CO.
5005 NO. WOLCOTT AVE.
CHICAGO 40, ILL.

Eastern Gas and Fuel Associates will open a new by-product coal mine at the southern tip of Boone County, W. Va., as a partial answer to the present shortage of available high volatile coal for coke and chemical plants of the United States. The mine is scheduled to go into operation about October, 1948, producing 2,000 tons a day, increasing, as the mine is developed, to 4,000 tons a day.

Chase Brass & Copper Co. has erected a new and modern warehouse and office building at 66 Branch Avenue, Providence, Rhode Island.

Jessop Steel Co., Washington, Pa., and the Alan Wood Steel Co., Conshohocken, Pa., have completed a working agreement whereby the technical and manufacturing facilities of both companies are to be used for large tonnage production of stainless-clad steel sheets.

The Ohio Rubber Co. has opened a new plant, incorporated as The Ohio Rubber Co. of California, at 6700 Cherry Ave., Long Beach, Calif. The plant will serve the area west of the Rocky Mountains. In addition to its mechanical molded and extruded products, the new plant will produce "Air King" semi-pneumatic tires.

Electric Auto-Lite Co., Toledo, O., has acquired a new manufacturing plant, its twenty-seventh in the United States and Canada, at Westover, N. Y. Purchased from the War Assets Administration, the building has 585,000 square feet of floor space.

Pittsburgh Plate Glass Co. has acquired the business of the Forbes Varnish Co., Cleveland, O. The new unit will continue operation as the Forbes Finishes Division of the Pittsburgh Plate Glass Co.

Hewitt Rubber Division, Hewitt-Robins Inc., Buffalo, N. Y., has announced that Maltese Cross conveyor and elevator belting again is in production after being withheld from manufacture during the war because of government restrictions on the use of materials.

Dow Chemical Co. has purchased two surplus magnesium facilities in Ludington, Mich., from the War Assets Administration. One was operated during the war by the Dow Chemical Co., the other by the Dow Magnesium Corp. The sale price was \$3,000,000.

Benwood-Linze Co., St. Louis, Mo., and its manufacturing subsidiary, the B-L Electric Manufacturing Co. have been consolidated. All operations of the latter company are now being conducted by the Benwood-Linze Co.

Carboloy Co., Inc., Detroit, Mich., has appointed the Wiley-Hughes Supply Co., Inc., Spruce St. and New York Ave., Trenton 8, N. J., as its authorized distributor, to supply the metropolitan Trenton and central New Jersey district.

(Please turn to page 330)

You'll see **BIG THINGS**

... in Parker-Kalon's Booth 243-A
at the Machine Tool Builders Show!



WORLD'S BIGGEST CAP SCREW

a precision-made giant that features
P-K SIZE-MARK One of the Biggest Improvements
ever made in Socket Head Cap Screws.
Ends Guessing, Errors, Lost Time!



WORLD'S BIGGEST SET SCREW

demonstrating the
P-K GROUND THREAD
Another Big Advancement by P-K

TWO P-K "FIRSTS" you'll want to see at the big Show in the Chicago-Dodge plant. Two important developments, offering benefits in your product

assembly, which you'll want to know about. Visit the P-K booth. Write for samples and details. Parker-Kalon Corp., 200 Varick St., New York 14.

P-K SOCKET SCREWS AVAILABLE FOR PROMPT DELIVERY

SOLD ONLY THROUGH ACCREDITED DISTRIBUTORS

PARKER-KALON *Cold-forged* **SOCKET SCREWS**



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Over 4500 shapes and sizes of name plates for which we have dies in stock are shown in this book. By choosing one of these designs you can effect a material saving. If you or your Engineering Department can make use of it write us now for a copy of "Designs for Name plates"... Your request for quotation is solicited—you will receive a prompt reply.



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SUBSIDIARY OF DODGE MFG. CORPORATION, MISHAWAKA, INDIANA

Monsanto Chemical Co., St. Louis, Mo., has let contracts for the reconstruction of part of its plant at Texas City, Tex., which was destroyed in the disaster on April 15. W. S. Bellows Co. of Houston will do the building work, and the Leonard Construction Co. of Chicago will install chemical process equipment and do piping and mechanical work.

J. R. Mares, general manager of Monsanto's Texas division estimates that the building contract will amount to a little over \$1,000,000, while mechanical installations with process equipment will approximate \$5,000,000.

General Electric Chemical Department, Pittsfield, Mass., has completed a new plant which will double the company's capacity to produce magnesium oxide.

Cornell-Dubilier Electric Corp., South Plainfield, N. J., has completed an additional plant of 41,000 square feet which is expected to double its manufacturing capacity.

United States Plywood Corp. has purchased the G. A. Mason Door Co., Milwaukee, Wis., and will continue the firm as a branch warehouse.

Continental Can Co., New York, N. Y., has acquired a total of 57 acres in the Burgard Avenue industrial area, Portland, Ore., for the construction of a can plant. Construction of the new building will go ahead immediately.

The Rapids Standard Co., Inc., Grand Rapids, Mich., has adopted the trade name "Durastan" to designate its line of phenolic plastic caster wheels, formerly known as the "MRK Resinoid" wheels.

Railroad Siding Construction Co. has been formed in Pittsburgh, Pa., to handle new sidings, maintain and rehabilitate old sidings and handle excavations in conjunction with siding work.

SKF Industries, Inc., Philadelphia, Pa., has announced a \$4,000,000 two-year modernization and expansion program in its two Philadelphia plants. New machinery, capable in some instances of operating from two to six times faster than standardized equipment, will be installed.

Meehanite Metal Corp., New Rochelle, N. Y., has entered into a contract with Builders Iron Foundry, Providence, R. I., for the manufacture of Meehanite castings. Most of the foundry's production of castings will be used by its subsidiary, Builders-Providence, Inc., in the fabrication of precision recording, indicating and controlling instruments for industrial and power plants, and Venturi instruments for water works and sewage plants.

United States Plywood Corp., New York, N. Y., is constructing a new plant in Portland, Ore., for the manufacture of synthetic resins for use in its own plywood plants and those of associated mills. The plant is expected to be in operation by August 1.



125 acres in a pound bottle!

Fantastic as it seems, the effective adsorbent surfaces of a pound of activated carbon are actually equal in area to about 125 acres.

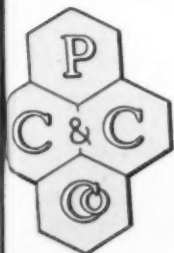
We don't pretend to know how this can be possible, but our research men, who understand such things, have figured it out scientifically. We like to think of *what* it does rather than *how* it does it.

For example, when used to isolate streptomycin from the mold liquor in which it is produced, a *Pittsburgh* activated carbon, tailor-made for this purpose and with greater adsorptive capacity, assisted materially in the rapid development of a process with a capacity sufficient to permit removal of the "wonder drug" from the government's critical list. Soon

streptomycin may be as available as penicillin.

Less dramatically, but like the producer of streptomycin, a manufacturer of water purification systems for homes, institutions, and industries tested every available adsorbent and then selected a *Pittsburgh* activated carbon which was specifically designed to meet the exacting requirements of his purification systems.

If your "problem" involves the use of an adsorbent, in gas or liquid phase, for purification, solvent recovery, decolorization, deodorization, fractionation, isolation, catalysis or air conditioning, you should investigate the adaptability of activated carbon to your processes. *Pittsburgh* activated carbon is produced in the types and grades usually required, or a special type can be developed for your specific need. Your inquiries are invited. Write for latest price list.



PITTSBURGH COKE & CHEMICAL COMPANY

Grant Building · Pittsburgh 30, Pa.

Another DOLGE First!

KADOL

The New **LIQUID**
Floor Cleaning Compound
DEVELOPED IN DOLGE LABORATORIES

- KADOL is today's method of cleaning various types of flooring because its concentrated, brilliant liquid form permits pouring to make an economical dilution of only two ounces to the gallon of water. Easy to handle — and it goes a long, clean way in keeping your floors immaculate.

- KADOL is neutral — can be used safely on linoleum, cork also wood mastic, tile and many other surfaces, and is recommended as a general cleaner. No rinsing is ordinarily required; when a KADOL-cleaned surface is dry-mopped, an attractive polish results.

- KADOL has no druggy, clinging odor associated with usual cleaning compounds. Its fragrance is pleasant and unobtrusive.

- Write for the new KADOL booklet which explains its many advantages, and see your DOLGE Service Man.

KADOL

The C. B. DOLGE CO.

WESTPORT, CONNECTICUT

HARPER COMPANY OPENS CLEVELAND BRANCH

The H. M. Harper Company, manufacturers of Everlasting fastenings, bolts, nuts, screws, made from non-ferrous and stainless steel alloys, has opened a factory branch office at 17600 Detroit Avenue, Cleveland 7, O. The new office is under the management of Earl A. Channer, former Chicago district head and New York branch manager for the company.

Mr. Channer has been with the company since 1939, with the exception of three years' service with the Army Air Forces.

1 1 1

GOULD ACQUIRES PHILCO STORAGE BATTERY DIVISION

Acquisition of the entire business and plant facilities of the Storage Battery Division of Philco Corporation and their consolidation with the Gould Storage Battery Corporation, a subsidiary of National Battery Corporation, to form one of the largest industrial and automobile replacement storage battery companies in the United States, was announced recently by A. H. Daggett, President of Gould and National Battery, St. Paul, Minn.

With the acquisition of the Trenton, N. J., storage battery plant of Philco, Gould and National Battery now have manufacturing plants located at all strategic points throughout the United States," Daggett pointed out. "National Battery" is already one of the largest producers of automobile replacement batteries and as a result of this consolidation will become a leader also in the industrial battery field, which supplies the railroad, mining, public utility, and heavy industry fields, as well as the United States Government.

1 1 1

TUCKER CORP. GRANTED EXTENSION ON DODGE CHRYSLER PLANT

Major General Robert M. Littlejohn, Administrator, War Assets Administration, announced recently that he had granted to the Tucker Corporation an extension of four months on the original letter of intent, thereby extending the period in which Tucker might secure the necessary finances in order to gain a firm lease on the Dodge Chrysler plant located at Chicago, Illinois.

Mr. Littlejohn stated that this extension had been authorized as a result of the Securities Exchange Commission's approval for financing by Tucker, also the fact that Tucker had complied with all stipulations placed on the transaction by War Assets.

The Dodge Chrysler plant was completed in early '42 at a cost of \$170,946,794 to the government. \$75,832,582 for real property and \$95,114,212 for the equipment and machinery. Owned by the Reconstruction Finance Corporation, it was used for the manufacture of aircraft engines and was operated by the Dodge

FREE CATALOG



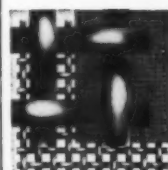
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If it's not in the catalog, we'll design it for you.

Write for Catalog 110 today!

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DO YOU USE WIRE CLOTH?



MICHIGAN

- Draws the Wire
- Weaves the Cloth
- Fabricates the Product

in one continuous line

OR WIRE CLOTH PRODUCTS?

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- Uniform Workmanship
- Economical Production
- Deliveries on Schedule

for your requirements



Send Michigan Your Inquiries

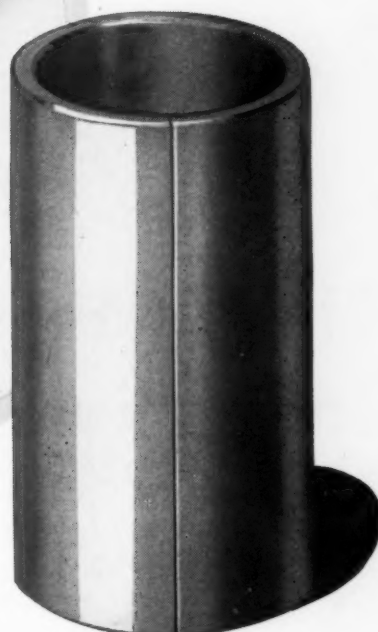
**MICHIGAN
WIRE CLOTH COMPANY**

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a typical example of how

THE FORMETAL * means lower costs to you

**the Bushing
that saved
\$16,800**



to get your product really rolling... use

FORMETAL

Superformed

BUSHINGS AND BEARINGS

The *Improved Quality of Formetal "Superformed" Bushings and Bearings gives you better performance at real dollar savings.

For example, an automotive parts manufacturer replaced the ordinary bushings he was using with Formetal Bushings made to his specifications. Now he not only secures better performance, but his savings on bushing costs alone are over \$16,800 annually.

The exclusive method by which Formetal Superformed Bushings and Bearings are manufactured gives them qualities that ordinary bushings do not have. They can provide a higher Rockwell hardness without loss of machinability. A thinner wall often will give the same strength as the heavy wall of an ordinary bushing. Custom-made oil grooves, to provide the proper wiping action of the oil film can be engineered to your exact need.

Made of bronze, steel, or an alloy to your specification, FORMETAL bushings or bearings save you money. It costs nothing to obtain the data that applies to your product. Write for details and a copy of free reference booklet of BUSHINGS, BEARINGS AND SPACER TUBES...you will find it extremely informative.

National Formetal Co., Inc., 6609 Metta Ave., Cleveland 14, Ohio

Please send free copy of your reference catalog.

Name

Company

Product manufactured

Address

City and State



NATIONAL FORMETAL CO., INC.

ESTABLISHED 1919

Manufacturers of "Superformed" Bushings and Bearings...and Spacer Tubes
6609 METTA AVENUE - CLEVELAND 14, OHIO

Offices in DETROIT • CHICAGO • LOS ANGELES • INDIANAPOLIS



This MERZ New-Matic Measuring Machine checks oversize, undersize, out-of-roundness and taper. Also selects four diameter groups.

Here's How MERZ Cuts Inspection Time and Cost

• Because it checks oversize, undersize, taper, out-of-roundness and four selected diameter groups, accurately and automatically—without revolving the parts—the MERZ New-Matic Sorting and Gaging Machine provides the speed and smoothness to keep parts in inspection in pace with modern mass production.

With its outstanding speed and accuracy, assured by the exclusive MERZ New-Matic principle, this machine is typical of the precision inspection equipment produced by MERZ for all types of checking operations. Write for full details on how the creative engineering

skill and precision craftsmanship available at MERZ can design and build sorting and gaging equipment to reduce materially the time and cost of your most intricate and specialized inspections.

MERZ New-Matic Measuring Machines are extremely fast and accurate, providing the exclusive MERZ principles of "point-to-point gaging" and "balanced-air" control for high-precision inspection. Other models for every checking requirement. Ask for the new 20-page booklet.

MERZ ENGINEERING COMPANY
INDIANAPOLIS 7, INDIANA

VISIT MERZ EXHIBIT—33F—MACHINE TOOL SHOW



(Continued from page 332)

Chrysler Corporation. The plant was declared surplus by Reconstruction Finance Corporation September 20, 1945 and in December of the same year was nationally advertised for sale. The Tucker Corporation's bid involved lease with option to purchase land and buildings at \$26,-260,000.

The award was made to the Tucker Corporation on the basis that it most nearly fulfill the objectives of the Surplus Property Act as passed by Congress, in that it provided for: Maximum employment estimated at 35,000 persons; use of entire plant; competition in a restricted field, to wit, the manufacture of automobiles; obtaining the maximum financial return to the Federal Government.

The letter of intent, signed in September 1946, provides for a ten year lease with a minimum rental of \$500,000 a year for the first two years, and \$2,400,000 a year thereafter, or three percent of the gross sales moving out of the premises, whichever is the greater.

1 1 1

FEDERATED METALS LICENSED TO MANUFACTURE "EVERDUR"

Federated Metals division, American Smelting and Refining Co., has been licensed to manufacture and sell "Everdur", a patented silicon bronze alloy originally produced and sold by the American Brass Co.

The alloy which Federated will produce is to be used for casting purposes only, it was stated, in contrast with the wrought "Everdur" alloys which the American Brass Co. will continue to make. It will be referred to generally as "Everdur 1000" alloy. It is a copper-silicon-manganese alloy which is corrosion resistant and possesses high strength and toughness. Ready weldability and ease of casting by all foundry methods are said to be among its outstanding characteristics. The alloy finds extensive application in parts that must withstand corrosive attack, such as valve parts, chain links, marine hardware, and pulp machinery.

1 1 1

MORTON NEW ADMINISTRATOR OF ZONE III, W.A.A.

Hamilton Morton, of Chicago, has been named as Zone III Administrator of the War Assets Administration in charge of the nearly two billion dollar surplus disposal program for the six W.A.A. regional offices of Zone III—Chicago, Minneapolis, Detroit, Cleveland, Cincinnati and Louisville. Before his present appointment Mr. Morton served as Associate Administrator of the Kansas City W.A.A. Zone Office, and was Fort Worth, Tex., Regional Director. He had a thirteen-year career in private business and industry in the fields of accounting and purchasing, and also worked in the establishment of U.S. Treasury procurement programs prior to and during the war.

DoALL BAND-SAW BLADES

Reg. U.S. Pat. Off.

cut all materials



BLADE FOR EVERY PURPOSE

Contour Sawing — industry's specialized bandsawing technique developed at DoALL, world's bandsawing headquarters—enables you to saw anything, even the hardest metals. Slices stock to shape in minutes; no "whittling" to worthless chips in hours or days like other machine cutting processes. Straight or curved cuts, internal as well as external, at any angle. Continuous cutting—no time-wasting backstroke. Smooth power at infinitely variable speeds for greatest efficiency of many special saw blades.

DoALL strip-out container for quick, easy and safe dispensing.



No. 2,255,577
Pat. No. 127,313
Patents Pending



IRON, STEEL
BRASS, COPPER
ALUMINUM
ALLOYS

PLYWOOD
PLASTICS
LAMINATES
WOOD

STAINLESS STEEL
WOOD

HEAT-TREATED STEEL
HARD ALLOYS
CASTINGS

WOOD
PLASTICS
HARD-PRESSED BOARDS

RUBBER
CORK

STACKED CLOTH

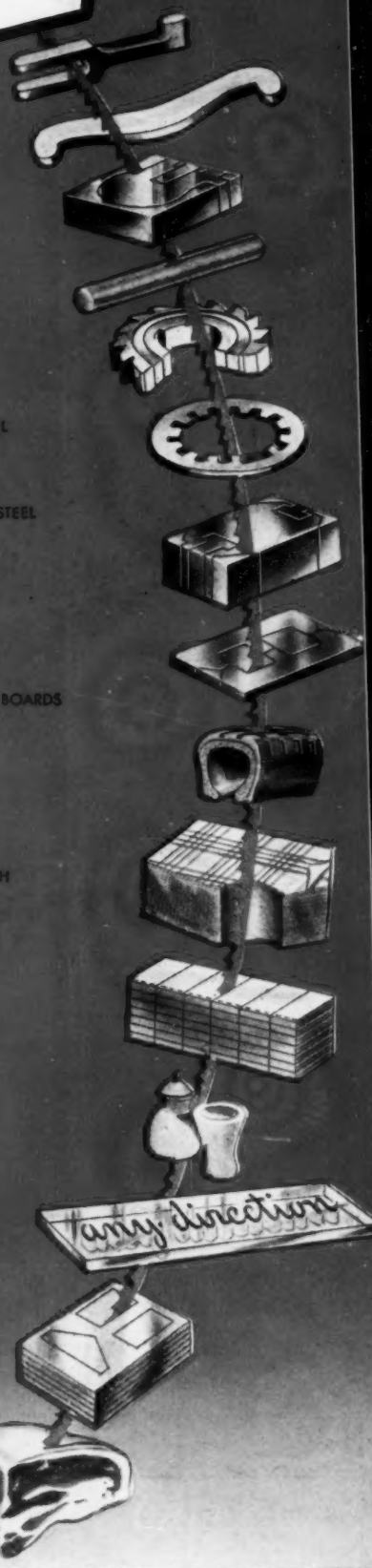
WOOD
METAL
PLASTICS
CUTS IN ANY
DIRECTION

BOOKS, PADS
MAGAZINES

GLASS
CHINA
PORCELAIN

CERAMICS
CLAY, TILE

MEAT
BONE
FISH
DRY ICE



The **DoALL** Company

Reg. U.S. Pat. Off.

REPRESENTATIVES
IN 56 COUNTRIES

DoALL STORES
IN KEY CITIES

Des. Plaines, Illinois
Cable Address: DoALL, Des Plaines



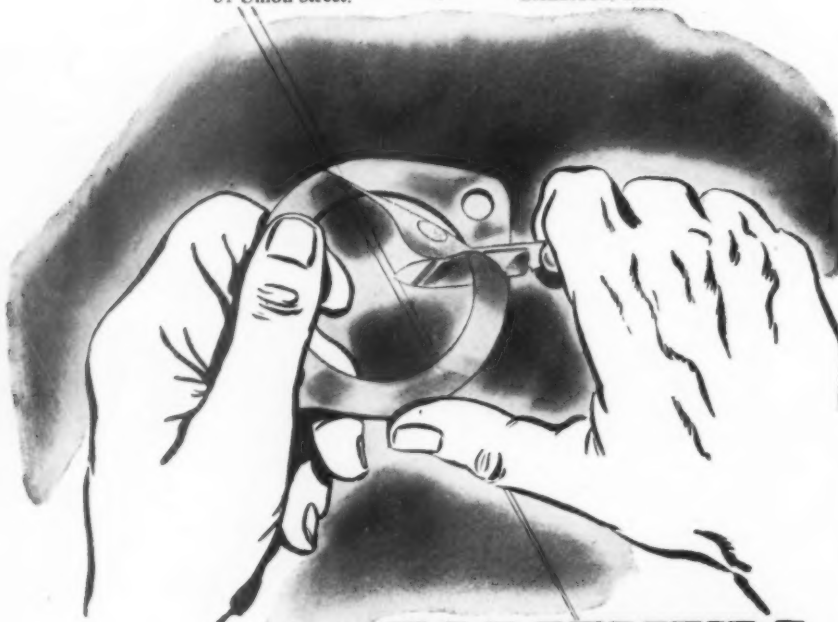
IMPORTANT

assembly savings

RECONVERSION TIME is cost-cutting time. Many of the foremost machinery builders are finding that by simply *peeling* precision laminations from Laminum shims, much costly machining is made unnecessary in accurately fitting bearings, gears, etc. These savings are specific, and large enough to be important. Want performance data?

Laminum shims are cut to your specifications. For maintenance work, however, stock shim materials are sold through industrial supply houses.

Laminated Shim Company, Incorporated.
51 Union Street. • Glenbrook, Conn.



LAMINUM

THE SOLID SHIM THAT *peels* FOR ADJUSTMENT

Purchasing Program Doubled

(Continued from page 109)

of the type we need, or whose sales departments might be interested in our needs. We like to develop supplier contacts through their purchasing departments because we feel that it is one of the many little things we purchasing agents can do to give sales departments a better picture of the importance of the purchasing function. Also, we get in contact with the purchasing departments of the large cities and the states, the state highway departments, and various agencies of the Federal Government.

"Through these contacts we have obtained valuable information and technical data for use in preparing our specifications, as well as names of manufacturers and information on operating and maintenance costs for tools and equipment, in addition to original purchase cost figures.

"While the acquisition of the airports will practically double our purchase volume, the additional work has been absorbed within our present organization, with only small increases in our buying and clerical forces. Obviously, in some of our material purchases, procurement for our new responsibilities is merely a matter of extending contracts now covering bridges and tunnels and other operations."

Buying by Pictures

A unique procedure developed by the Authority to enable the commissioners and the planning, engineering and other departments to gain a clear concept of the type of equipment under consideration and its uses, is the projecting of pictures thereof on a screen at meetings of the commissioners. These showings give visual evidence to those concerned, regarding the kind and size of equipment covered by a recommendation, and regarding its utility and adaptability for the service for which it is proposed.

This system has been very effective in the consideration of equipment purchases, but it is not limited to this phase. It is used by engineers and others to clarify proposed work projects, field and building layouts, runway improvements, or tunnel and construction projects that may be under consideration.

Mr. McGuire states that the system has proved a time-saver for all concerned, and a definite aid in procuring prompt approval of equipment purchases.

**They're
Cost-Controlling
and "See-Worthy"**

**... that's why Outboard Motor
Builders and Owners "go Overboard"
for AMERICAN PHILLIPS SCREWS**

"MORE POWER TO YOU" IN PRODUCTION — Assembly speeds skyrocket with fumble-proof, slip-proof, burr-proof and damage-proof American Phillips Screws — they're automatically straight to drive. Makers of motors, boats, planes, appliances, furniture, radios and other products who have set their sights for volume production and lower costs earn time-savings UP TO 50%.

"MORE POWER TO YOU" IN PROMOTION — In the showroom, American Phillips Screw-Fastened products have a sturdy, ship-shape, modern look. Everywhere the decorative, straight set heads of American Phillips Screws tell a sales story to the customer of quality workmanship and fastening that stays put! Is *your* product collecting on this *money-saving* and *money-making* combination of advantages? Write American for complete details.

AMERICAN SCREW COMPANY, PROVIDENCE 1, RHODE ISLAND

Chicago 11: 589 E. Illinois St.

Detroit 2: 502 Stephenson Building

**4-WINGED DRIVER CAN'T SLIP OUT
OF PHILLIPS TAPERED RECESS**



**AMERICAN
PHILLIPS** *Screws*



ALL TYPES

ALL METALS: Steel,
Brass, Bronze, Stain-
less Steel, Aluminum,
Monel, Everdur (sili-
con bronze)

GRAY IRON CASTINGS

S. A. E. OR A. S. T. M.
CLASSES 20-30-40

2 FOUNDRIES

on 2 main line railroads

equipped for fast, efficient production to meet your casting requirements.

Special facilities for rollover and cope-and-drag production to 150 pounds. Other castings up to 1000 pounds.

Send us your inquiries or ask for a representative to call to discuss your casting requirements.

Compressor Unit



Intake Manifold
with Heater Body



**TYPICAL
FOREST CITY
CASTINGS**
(unretouched photos)



Gas Meter Valve Plate

THE FOREST CITY FOUNDRIES COMPANY

2500 WEST 27TH STREET
CLEVELAND 13, OHIO
Phone PRospect 5040

Better Packing

(Continued from page 112)

Packaging Board established by the Secretaries of War and Navy in 1945, and reports of the Bureau of Standards and the Forest Products Laboratory.

Some of the wartime lessons were apparent in new types of packaging methods and devices exhibited at the American Management Association's Packaging Exposition held last April in Philadelphia. Much more remains to be done to assure that goods produced are safely delivered.

Since it is impossible to have inspectors watch each person who handles a box, carton or barrel, the next best thing is to make shipping containers so good that only deliberate or malicious mishandling will cause damage to contents.

In the more competitive days ahead, losses due to bad packing may spell the difference between business success and failure. Surely, after the exhaustive production operations employed to make the goods, the money spent to pack them safely is well spent.

✓ ✓ ✓

Price Control Through Sound Purchasing

(Continued from page 106)

tives new ways of doing things may be learned that should be passed on to engineering and production in connection with specific parts or materials called for in a company product. A cost analyst familiar with engineering and production, operating in the purchasing department, may become a very valuable point of liaison in this respect, since he should be able to gage the savings possible if some innovation were to be decided upon.

Improved Performance

In connection with new work of a complicated nature which has to be subcontracted, and on work where there may be a series of follow-on contracts, so that production is continuous over a period of time, the use of the "learning curve" to predict improvement through the lowering of cost of labor, and the corresponding possibility of adjusting the purchase price, may be very worth while. During the war it was used very extensively both by the Army Air Forces and by the prime contract-

(Please turn to page 340)

DARNELL CASTERS



Handling

Materials

at

Low Cost

DARNELL CORP. LTD.

LONG BEACH 4, CALIFORNIA

60 WALKER ST. NEW YORK 13, N. Y.

36 N. CLINTON, CHICAGO 6, ILL.

In Any V-Belt

Only the **SIDES** Touch the Pulley

The Sides

Do **ALL** the **GRIPPING**



Diagram of V-Belt in Sheave Groove

— Naturally, It's the **SIDES** that GET the WEAR!

The moment you look at a V-belt in its sheave, you see that the *sides* do all the *gripping*—They get *all the wear* against the sheave groove wall. The sides *pick up* the load. They transmit that load to the belt as a whole. And then, once more, the sides—and the sides alone—take hold of the driven pulley and deliver the power to it.

This simple fact explains why you have always noticed that the *sidewall* of the ordinary V-Belt is the part that *wears out first*.

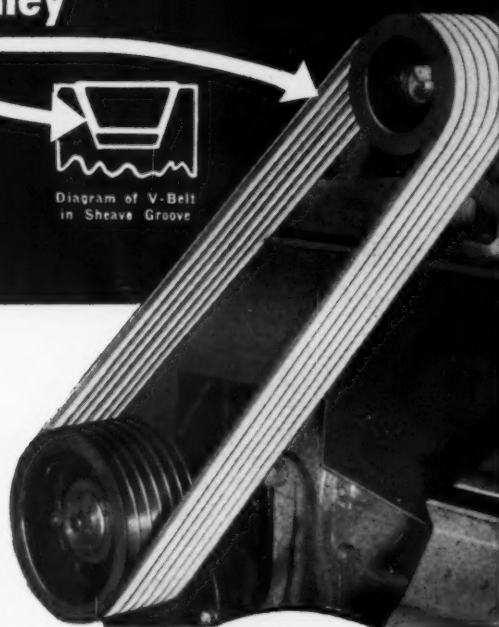
★ Now See How the *Patented* **CONCAVE SIDE** **REDUCES** Sidewall Wear - **Lengthens Belt Life!**

Clearly, since the sidewall is the part that wears out first, anything that prolongs the life of the sidewall will lengthen the life of the belt. The simple diagrams on the right show exactly why the ordinary, straight-sided V-Belt gets excessive wear along the *middle* of the sides. They show also why the Patented Concave Side greatly reduces sidewall wear in Gates Vulco Ropes. That is the simple reason why your Gates Vulco Ropes are giving you so much longer service than any straight-sided V-Belts can possibly give.

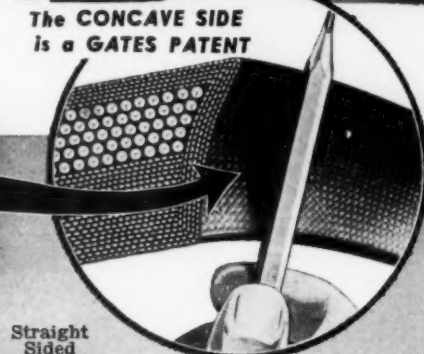
★ **More Important NOW That Gates SUPER V-Belts are Available**

Now that Gates *Specialized* Research has resulted in Super V-Belts capable of carrying much heavier loads—up to 40% *higher horsepower ratings* in some cases—the sidewall of the belt is called upon to do even *more work* in transmitting these heavier loads to the pulley. Naturally, with heavier loading on the sidewall, the life-prolonging Concave Side is more important NOW than ever before!

THE GATES RUBBER COMPANY DENVER, U. S. A.



The **CONCAVE SIDE** is a **GATES PATENT**



Straight Sided V-Belt



How Straight Sided V-Belt Bulges When Bending Around Its Pulley



You can actually feel the bulging of a straight-sided V-Belt by holding the sides between your finger and thumb and then bending the belt. Naturally, this bulging produces excessive wear along the middle of the sidewall as indicated by arrows.



Gates V-Belt with Patented Concave Sidewall

Showing How Concave Side of Gates V-Belt Straightens to Make Perfect Fit in Sheave Groove When Belt Is Bending Over Pulley.



No bulging against the sides of the sheave groove means that sidewall wear is evenly distributed over the full width of the sidewall—and that means much longer life for the belt!

"World's Largest Maker of V-Belts"

GATES VULCO ROPE DRIVES

Engineering Offices and Jobber Stocks

IN ALL INDUSTRIAL CENTERS

of the U. S. and 71 Foreign Countries



THE MARK OF SPECIALIZED RESEARCH

MORE THAN **70** OAKITE MATERIALS

to help solve all your cleaning problems

... plus the services of your nearby Oakite Technical Service Representative who will help you streamline your cleaning cycles. He brings you valuable new ideas and methods sure to help solve your cleaning problems... cut down your costs.

He is one of the 160 Oakite men continuously calling on the makers of the products you use in your home, office, and factory. Trained and equipped to work out the countless cleaning and surface preparation procedures of modern industry, he's your best bet when a cleaning problem crops up. And you can bank on the methods and materials he suggests as being sound... tested for perfect results.

Check your 'phone book for the address of your local Oakite Technical Service Representative, or drop us a card at Oakite Products, Inc., 54 Thames Street, New York 6, N. Y. and we'll have him call.

OAKITE

REG. U. S. PAT. OFF.

SPECIALIZED CLEANING MATERIALS • METHODS • SERVICE

Technical Representatives in Principal Cities of U. S. & Canada

FLASH

The
New

BETTER WORK ASSURED

On "Off the Ground"
**CONSTRUCTION AND
MAINTENANCE JOBS**
WITH

STAGE SAF-T-SWING

At last, a Swng Stage — approved by the Underwriters' Laboratories — which combines Maximum Safety with Efficient Two-Way Operation. A new, specially designed, GEAR-TYPE WINCH permits fast, easy cranking either all the way up or all the way down. An AUTOMATIC BRAKING MECHANISM holds stage securely at any desired level. These and numerous other safety features make the Saf-T-Swing tops in the field of swing stages. Ideal for all types of construction and maintenance jobs.

Free . . . Complete Details

Get all of the facts on the new Safeway Saf-T-Swing Stage by writing, today, for our new, highly illustrated Bulletin No. P 947.



SAFEGWAY STEEL PRODUCTS, INC.

MANUFACTURERS OF TUBULAR STEEL SCAFFOLDING AND EQUIPMENT

6319 W. STATE ST.

MILWAUKEE 13, WISCONSIN

Price Control Through Sound Purchasing

(Continued from page 338)

ors, with considerable success.

There is not enough space to explain the learning curve here, but in principle it works something like this: measuring man-hours per unit of product, the average man-hour for a given number of units of the product will be 80% of the average man-hours consumed per unit in making half that number. These averages are always taken as applying to quantities of product counting cumulatively from the number one unit.

It should be pointed out that the cause of the predicted improvement includes all the factors of management and operation alike, including the workmen and women on the job, in that any or all—by suggestion, performance, supervision and organization responsibility—may contribute to ironing out the bugs of the job and bettering the methods employed.

Obviously where there is piece work there tends to be a floor retarding improvement, since it is generally the case that production workers will not risk earning more than understood maximum lest piece rates be cut. But when you see bombers slide down the learning curve from 45,000 man-hours per plane to less than 8,000 over a period of a couple of years, consistently following the prediction of the curve, and hundreds of other cases on smaller items and sub-assemblies, its value as a measure of improvement in cost cannot be gainsaid.

Plotted on logarithmic chart paper the learning "curve" becomes a straight line, so that by plotting the actual performance on new jobs when costs are bound to be too high, it is possible to predict where the costs should go, and so avoid paying for a "doubled estimate" on contracts as to which vendors may be doubtful about how they might come out. It is simply necessary to hold off fixing the price till the first run has been made, and writing into the agreement that the customer may send in his engineers to find out why the costs do not follow down the learning curve, if they don't. Naturally, the vendor has to be sold on the use of the learning curve.

Need for Cost Reduction

It would be hard to estimate how much of the nation's production at this time consists in high-cost job—
(Please turn to page 342)



HERE'S A WISSCO WIRE IN WHICH

*Balanced
Physical Properties*

ARE ESSENTIAL

Photographs courtesy of Metal Hose & Tubing Co., Dover, N. J. Makers of National Synthetic Hose for all petroleum products.

Fuel hose must stand up under extremes of service and climatic conditions—must reel readily and handle easily. To help meet these requirements, and to prevent collapse under suction or bursting under pressure, the wall of the hose is strengthened with Wissco Hose Reinforcing Wire.

The manufacture of this Wickwire Spencer specialty wire calls for a careful balance between tensile strength and ductility. Wissco Hose Reinforcing Wire is sufficiently ductile to permit easy forming, and it possesses the tensile strength necessary to stand the severe strain to which the finished hose is subjected.

Our mill men, many of whom have been with us for over a quarter of a century, know how to absolutely control, through chemical content, heat treatment and degree of cold work, the tensile strength and ductility of steel specialty wire.

Wissco Hose Reinforcing Wire is but one of many specialty wires produced by Wickwire Spencer, whose craftsmen in five great plants are ready to meet your requirements for high or low carbon steel specialty wire; round or shaped, in a wide variety of sizes, tempers, grades and finishes. Send us your order or inquiry.

WISSCO *Wire*

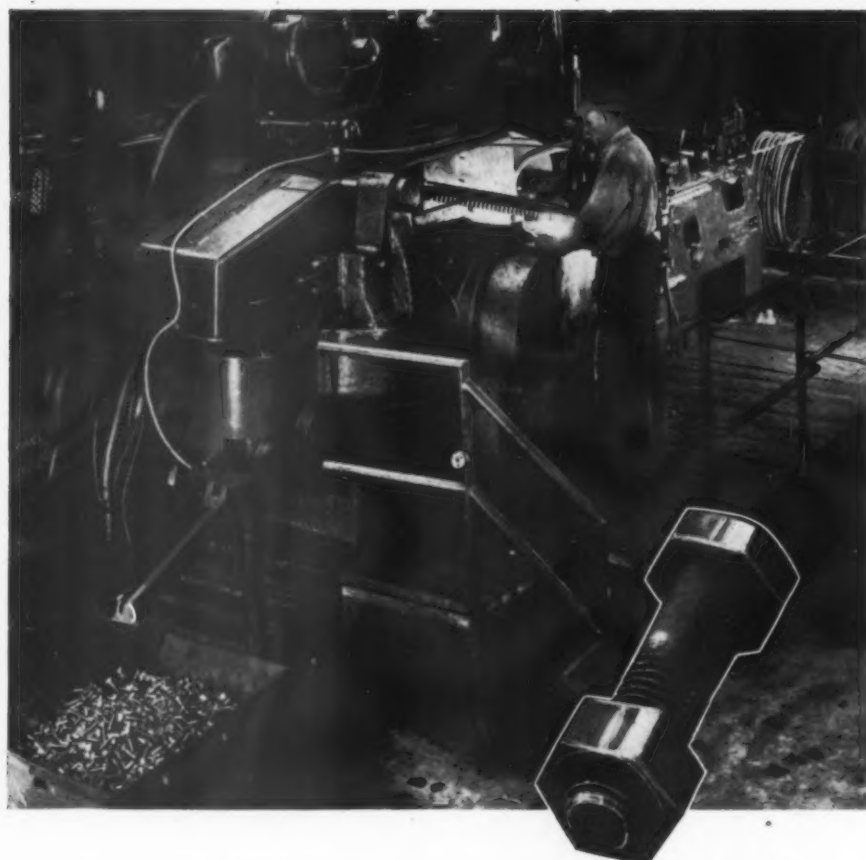
A PRODUCT OF WICKWIRE SPENCER STEEL DIVISION • THE COLORADO FUEL AND IRON CORPORATION

WIRE SALES OFFICE—361 DELAWARE AVE. BUFFALO 2, N. Y.

EXECUTIVE OFFICE—500 FIFTH AVENUE, NEW YORK 18, N. Y. • SALES OFFICES—BOSTON • CHICAGO • DENVER

PACIFIC COAST—THE CALIFORNIA WIRE CLOTH CORP., OAKLAND 6, CAL.





Accurately Made to Serve You Well

OLIVER FASTENERS

BOLTS, NUTS, RIVETS, CAP SCREWS

Better fits, faster threading-on, tighter joints, are assured by the accuracy of Oliver Industrial Fasteners. Above is shown one unit of a battery of modern bolt-making machines used in the production of Oliver bolts. Amazing accuracy and uniformity are here achieved with the advantages of cold-forming and mass-production.

Ordinarily the cost of installing and assembling an industrial fastener in a machine or fabricated structure is many times the cost of the fastener itself. Therefore, you want the best fasteners you can get. The greater dimensional accuracy, cleaner threads, well-formed heads and bodies of Oliver products are reflected in faster assembly and appreciable cost savings for you. When you specify OLIVER, you are sure of getting the best!

SEE YOUR DISTRIBUTOR FOR OLIVER PRODUCTS

OLIVER
IRON AND STEEL
Corporation

SOUTH TENTH AND MURIEL STREETS · PITTSBURGH 3, PENNSYLVANIA

Price Control Through Sound Purchasing

(Continued from page 340)

shop type of operations, but it would probably not be inaccurate to propound that there is more of that kind than of low-cost, quality-output, highly competitive operations. We can never expect to shift all of it to the latter, but if this country must begin to buy more and more raw materials from abroad, thus creating dollar credits against which to sell more and more of our manufactured goods competitively in foreign markets, then the purchasing agent becomes in a new way a highly important factor in building the economic life of the nation, through selling his vendors on the idea of becoming low-cost quality-production minded. And in any case, his efforts may mean the margin by which sales can be made in the face of tough competition.

1 1 1

Buyers And Salesmen Must Work Together

(Continued from page 114)

contribute to a high production and employment level in their local area by studied placement of contracts and orders. Contribution to a healthy business condition cannot help but assist in creating a healthy market in which to buy and healthy surroundings for the purchaser's own company operation."

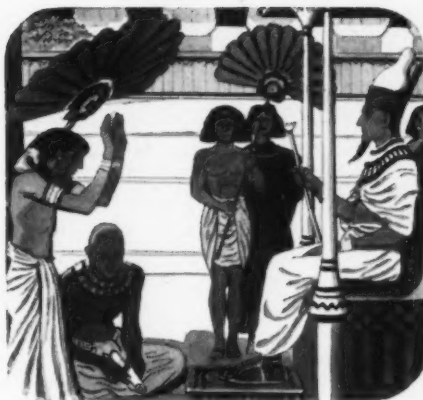
Developing Regional Markets

The Southern buyer's opportunity to purchase manufactured products in this area is limited, though the position is improved as compared with a few years ago. We need more production of finished products in the South. The increased number of industrial buying organizations within the area is an influence toward improvement of this situation. The placement of orders within this area for the products of other areas is also an important factor in our progress. If our order is placed with a distributor, selling agency, or sales office within this area, a proportion of the sales price is placed and spent here and contributes to our economic welfare, whereas if our order is mailed directly to a supplier in another section, in many cases little or no part of the purchase price will be invested in this area.

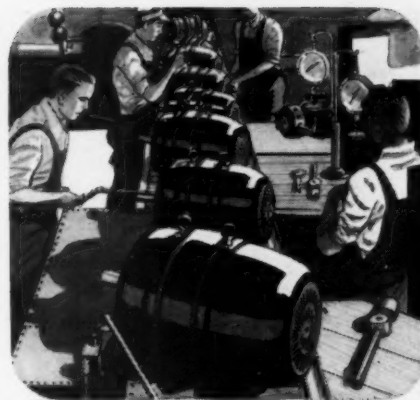
Southern purchasing agents are
(Please turn to page 344)



1 1561—Crude, manually-operated bellows were used in an attempt to pump fresh air into a mine, but with indifferent results, according to a journal published in Switzerland. And man's quest for comfort indoors was under way.



2 1890—This age-old method of keeping cool was still in use in many parts of the world. But in this era electric motors came into general use. Soon to come were new ways to make air work for man's comfort and well-being.



3 1915—The Howell Red Band Motor made its appearance. Seven years later the first movie theater was fully air conditioned. Other businesses followed. Air conditioning was on its way, thanks to the electric motor as a source of power.

Then, Air Conditioning arrived!



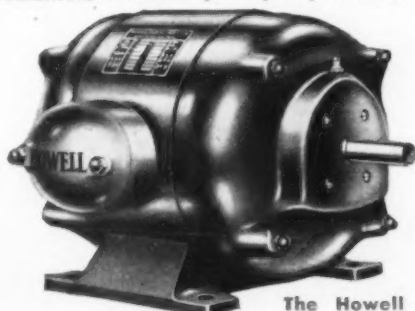
4 Today it's different! And better!

Air is universally used for comfort . . . for profit. It's the exceptional business that does not put air to work.

In the air conditioning and allied industries, you'll find Howell Motors driving fans, blowers, exhausters, air washers, compressors and conditioning equipment, as well as pumps, heating, drying and cooling apparatus. And you'll find every user has a good word for Howell!

Why? Because Howell Motors are industrial type motors designed for the toughest applications in industry. Consequently, they perform better on all jobs. Are you using them?

Here's another precision-built Howell Motor. Howell Motors are industrial type with copper or bronze rotors—specially insulated—statically and dynamically balanced. Be sure you specify Howells!



The Howell Protected Type Motors

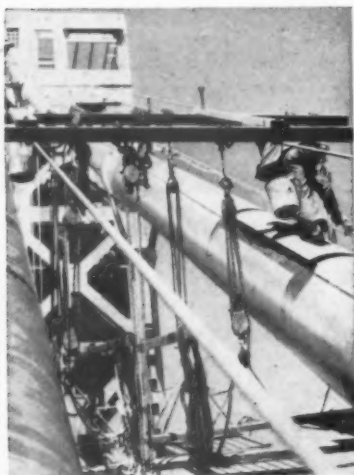
HOWELL MOTORS

HOWELL ELECTRIC MOTORS CO., HOWELL, MICH.

Manufacturers of Quality Industrial Type Motors Since 1915



Are you BUYING ROPE for PAINTERS



Courtesy Port of N.Y. Authority

Your painters, whose lives so often depend on the rope that supports their scaffolding, deserve safe, durable rope of unquestionable quality.

Whitlock Waterflex Manila is ideal for rigging and scaffolding work. Scientifically laid, and treated by the Waterflex Process, it is strong and durable. It is non-kinking and easy to handle whether wet or dry. For the safety of your painters and plant maintenance personnel, specify Whitlock Waterflex.



**WHITLOCK CORDAGE
COMPANY**

46 SOUTH STREET · NEW YORK 5, N. Y.

Buyers And Salesmen Must Work Together

(Continued from page 342)

becoming more aware of their opportunity and responsibility to contribute to our welfare in the placement of their orders. This theme has been emphasized in the meetings of our associations and in our regional meetings of the seven purchasing agents associations of the Southeast, held each fall. There are more Southern purchasing agents; according to statistics of the National Association of Purchasing Agents, the number has about doubled since 1943. Southern buying power is improved; the statistics show that individual income, which was abnormally low, has increased on a scale substantially greater than the national average increase during the past few years. Construction contract increases, demand for electric service, and other business indices support the improved business position of the Southeast. The potential market of Southern selling organizations, locally and sectionally, is improved. It behooves both our selling and purchasing organizations of the Southeast to continue our cooperative effort to improve the business of our area.

1 1 1

We Need To Know About The Atom

(Continued from page 138)

Ladies' and Gentlemen's Diary and Women's Almanac" offered far more than mere entertainment. It published the latest scientific news and awarded prizes for solutions to difficult mathematical problems.

John Dalton, the son of humble Quaker parents, was one of the Almanac's most avid readers. In 1789 he won a national prize for his answer to a challenging question on hydrostatic equilibrium. It is inspiring to read of this Quaker son of a poor English weaver working by candle-light in a humble cottage, preparing a lecture for a learned philosophical society in London. That lecture contained one of the most profound scientific statements ever heard. With becoming modesty, Dalton mentioned that he had been conducting an "inquiry into the ultimate particles of bodies". In describing his research he said that he had adopted the word "atom" because he felt it was more expressive than "particle" or "molecule".

(Please turn to page 348)

KEEP PRODUCTION ROLLING ON BEARINGS FROM L & S

Two-Fold Source of Supply—L & S manufactures radial, thrust, roller bearings, and pillow blocks.—L & S is distributor for other manufacturers.

Write Today — List quantity, number and brands of bearings you need. You will be advised immediately.

We Pay Best Prices
For Surplus Bearings

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COMPANY**

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OKLAHOMA CITY



Write
Today

SIMONDS GEARS



Quality
-Built!

—TO YOUR ORDER!

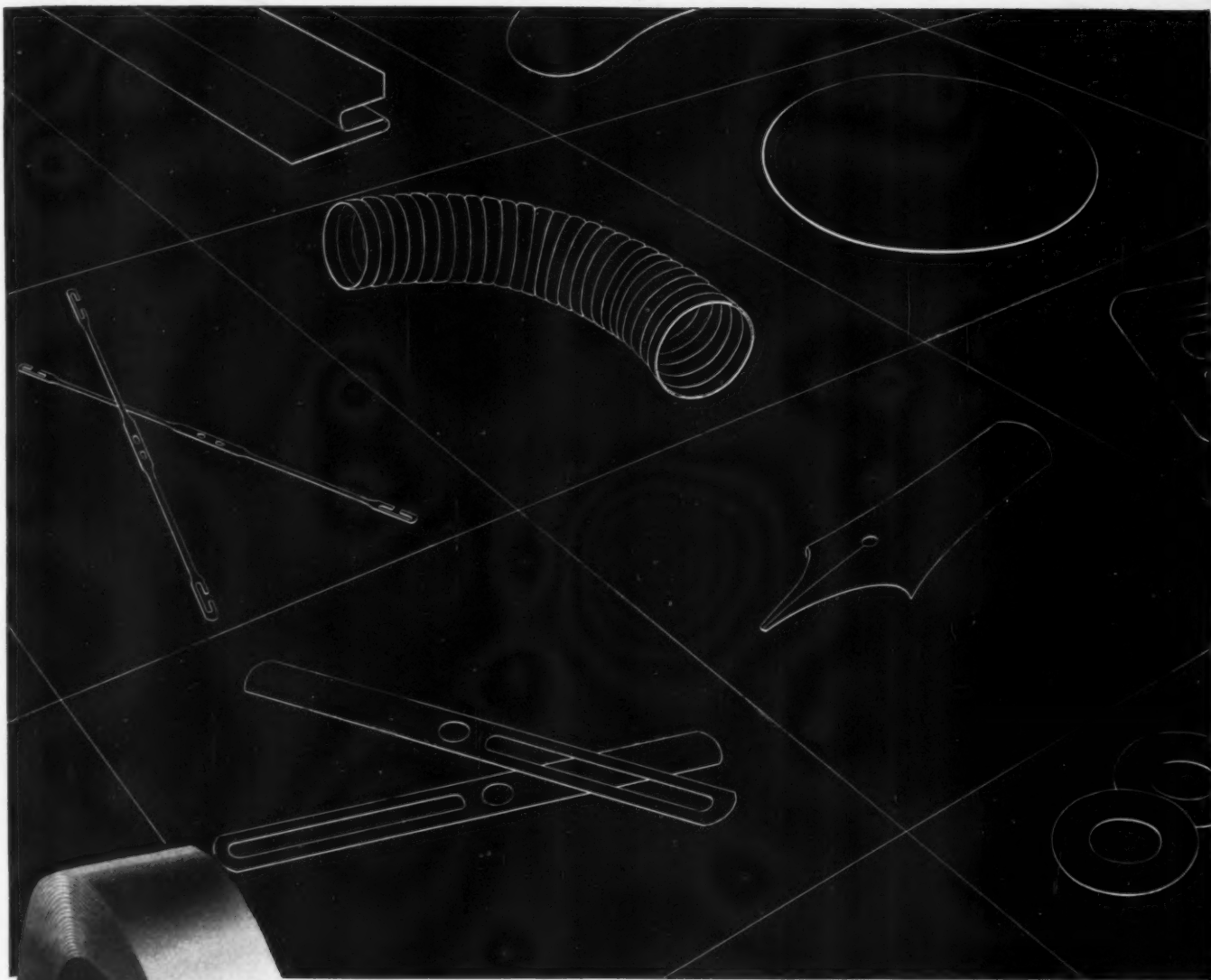
SPUR · BEVEL · MITRE · WORM
WORM GEARS · RACKS · PINIONS

Any material—heavy types—to your specifications. Also distributors for Ramsey Silent Chain Drives and couplings. Over 50 years' experience.

WRITE TODAY!

THE SIMONDS GEAR & MFG. CO.

LIBERTY AT 25TH
PITTSBURGH 22, PENNA.



here is .001 Stainless Steel!

One of Armco's war-born developments is chromium-nickel stainless steel strip as thin as .001 — **rolled in coils up to 13 inches wide!**

This makes possible many improved products for home and industry. Uses are diversified—from thermostat diaphragms to flexible metal hose, weather-stripping and pen points; from heddles and drop wires in textile looms to shim stock.

Armco's tissue-thin stainless steel is rolled to a remarkable gage-uniformity. And with it you get excellent corrosion resistance, a high strength/weight ratio, and attractive appearance. To your production line it brings all the cost-saving advantages of coils—no hand-feeding, relatively no end-of-strip scrap losses, less die-wear and faster production.

Write for data on ARMCO Thin-Gage Stainless Steels for your specific products. We'll be glad to supply you with the information you need. (If your requirements run to stainless steel bar stock remember many grades of ARMCO Stainless Steel bars are available for *immediate delivery*.)

The American Rolling Mill Company, 1021 Curtis Street, Middletown, Ohio.

THE AMERICAN ROLLING MILL COMPANY



Take a tip from



Mr. Kent Currie, Divisional Sales Mgr., Brush Division, Pittsburgh Plate Glass Co. (left), and Mr. J. M. Tilton, District Mgr. (middle) present facts about paint brushes to Mr. J. M. Kalista, Procurement Mgr. of the Koppers Co., Shops Division.

"GIVE THE P. A.'s WHAT THEY WANT — FACTS"

● "The P.A. of necessity, as well as by inclination, must be one of the best informed men in business under current conditions. Quality and price, important as they are, are only one phase of his work; availability, timing, labor—and cost-saving, are leading considerations as well. There has never been a time when it was so necessary as it is today to take the P.A. into your confidence and to discuss broad *facts* with him." That's sound advice from Kent Currie and J. M. Tilton, and Mr. Currie backs up his belief with an advertising program in Purchasing.

You, too, undoubtedly have a great many facts about your products and services which you should place before Purchasing Agents throughout industry. There is no better way to do this than by consistently advertising in Purchasing.

To get your product story to the P.A. *without fail*, put it in the one magazine he is sure to read—"Purchasing"—his own magazine. For latest data, write PURCHASING, 205 East 42nd Street, New York 17, N. Y., Offices in Chicago, Cleveland, Los Angeles.

PURCHASING

THE NATIONAL MAGAZINE FOR PURCHASING EXECUTIVES



A CONOVER-MAST
PUBLICATION

"Front Door Business..."

The soundest and most fundamental principle in selling to industry today lies in selling through the "front door" — through the office of the Purchasing Agent.

Most successful Sales Managers like Mr. Currie and Mr. Tilton know this, but just to make sure that every one of America's Sales Executives know it — and that nobody forgets it — the publishers of your magazine "Purchasing" run advertisements like the one opposite, in the key marketing magazines of the country.

These advertisements cover more than 40,000 men responsible for the sales and advertising of Industry's leading manufacturers.



RUGGED APRONS

FOR *Maximum* **WEAR**

- Immediately available to you
- "Tailored" for your needs
- Designed for Worker Protection
- Built for Hard Work
- Priced right

Every Sawyer apron is made from the best raw materials obtainable. Expert workmanship and design assures you that a Sawyer apron really protects the worker and gives maximum wear.

When you buy a FROG Brand (Oiled) apron, you are sure of buying one of the best industrial aprons manufactured.



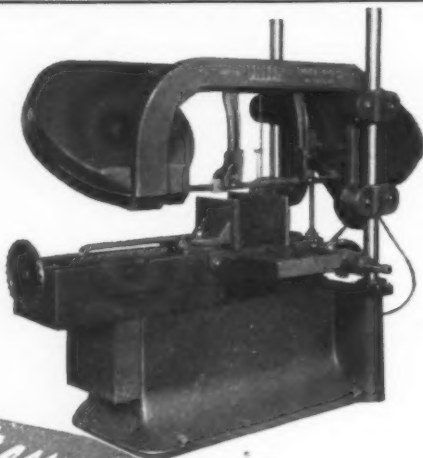
STYLE K-76
36" Wide
48" Long
Heavy Duck
Yellow Only

STYLE G-58
33" Wide
45" Long
Reversible
Yellow Only

THE H. M. SAWYER & SON CO.
28 Thorndike St. East Cambridge 41, Mass.

the new WELLS No. 12

- Automatic Cutting Cycle
- Controlled Blade Pressure
- Horizontal Blade Travel
- Magnetic Controls
- Hydraulic Operation



fast, accurate
METAL CUTTING
at low cost!

TO OPERATE

the new Wells No. 12, just place the stock in the quick acting vise and push the starting buttons. The cut is made automatically with

controlled blade pressure to any desired depth. At the completion of the cut the head returns to a predetermined position. You can't beat it for simplicity of operation. Write for details, today.



Products by Wells are Practical

METAL CUTTING BAND SAWS

WELLS MANUFACTURING CORPORATION
2400 JACKSON AVE., THREE RIVERS, MICH.

We Need To Know About The Atom

(Continued from page 344)

We are not informed of the reaction of his 18th Century audience, but we know now that John Dalton had initiated a train of investigation that led straight to Uranium 235, to New Mexico, to Hiroshima, Nagasaki and Bikini.

Dr. Hecht does not burden us with a detailed historical study of atomic energy development and the personalities connected with it, but he subtly invites the reader to extend exploration on his own. He makes it pretty clear that curiosity about scientific subjects and personages will richly reward adventurous intellects by revealing the dynamic quality of science and the healthy discipline of scientific methods.

He modestly apologizes that it would have required a book ten times the size of the present one, with a formidable array of diagrams and equations (and all without recourse to secret information), to make it scholarly and complete. Laymen will be grateful that he was impelled to forego such apparatus of scholarship. He has substituted intelligible content for sheer bulk, and has given us a likely introduction to the intellectual drama of science.

He explains: "My purpose is to supply a background against which people can think and act intelligently on the problems of atomic energy. So long as one supposes that this business is mysterious and secret, one cannot have a just evaluation of our possession and security. Only by understanding the basis and development of atomic energy can one judge the legislation and foreign policy that concern it. I hope that this book will help to make intelligent voters."

"Explaining The Atom" is a little book about a big subject—in-disputably the biggest and most terrifying subject of this or any other age. It more than lives up to the promise of its title.

1 1 1

UNTHREADED FASTENER FILM

A new industrial film entitled "Speed Nut Savings Factor" is now obtainable for free showing. This 17 minute, black, 16 mm movie shows typical Speed Nut applications to various assembly problems which have resulted in notable time and weight savings as well as conquering the vibration-loosening problem. Offered to all interested industries by Tinnerman Products, Inc., 2038 Fulton Road, Cleveland 13, Ohio.

Here's WIRE with "WIND-ABILITY" PLUS

FOR MINIMUM
OVER-ALL WINDING
COST AND MAXIMUM
UNIFORMITY



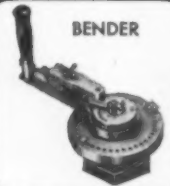
HIGH SPEED winding—whether bobbin, random or gang—subjects magnet wire to punishing treatment. Insulating film must be tough, yet pliable. Copper must have the proper degree of anneal. The spool-to-spool uniformity must be right.

Essex Extra-Test Magnet Wire has earned an unexcelled reputation in the most exacting applications. It helps insure coils of uniform size and resistance value—maximum turns in available space—freedom from broken wires, pile-ups, crossed turns, runbacks, spaced turns, and frequent tension adjustments. When you specify Essex Extra-Test Magnet Wire you can be *sure*.




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Warehouses* and Sales Offices: *Atlanta, Ga.; *Boston, Mass.; *Chicago, Ill.; Cleveland, Ohio; Dallas, Texas; Dayton, Ohio; *Detroit, Michigan; Kansas City, Mo.; *Los Angeles, California; Milwaukee, Wisconsin; *Newark, N. J.; Philadelphia, Pa.; *St. Louis, Mo.; *San Francisco, California.

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BENDER



SHEAR


NO DIES!

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"DIE-LESS DUPLICATING"...


a new industrial technique made possible by the accuracy, adaptability and ease of operation of DI-ACRO Precision Machines—Shears, Brakes, Benders—especially when used as a continuous, integrated production process.


The DI-ACRO System of "Metal Duplicating Without Dies" makes parts just as accurately as can be done with dies, to a tolerance of .001" in all duplicated work. The delay of waiting for dies is avoided, deliveries speeded up.



BRAKE

Write for Catalog





O'NEIL-IRWIN MFG. CO.

305 EIGHTH AVENUE, LAKE CITY, MINNESOTA

Buy Lubricants On Performance

(Continued from page 139)

sands of bearings is the principal power consuming factor. In such plants the performance of a lubricant must be measured by its friction reducing properties.

(4) Effect of lubricant on cost of lubrication. "The real cost of lubricant is reflected in the economies effected in production, maintenance and power, as well as the economy in long oil life, reduced consumption, etc."

"Having established his standards of performance, the purchaser can then require suppliers to meet those standards with brands whose quality, stability and uniformity can be relied on," says the Committee. "It has often been said that 'the most valuable ingredient of any product is the maker's good name'—and this applies to lubricants almost beyond any other material. Petroleum marketers have spent millions on research. Each company's brands embody the whole force of that company's integrity and its pride in skill and knowledge."

In conclusion the report states that purchasers in some instances are interested in having specifications to use as checks on uniformity of deliveries, and that there is a practical way to do this if it is

worth the expense, namely, the simple physical specifications used by the supplier as manufacturing controls; that laboratory test methods now available are not of themselves, and without performance tests, a reliable guide to performance in service; that with rare exceptions purchasers are not in a position to conduct or interpret the elaborate engine or gear tests required for even the preliminary evaluation of oil performance characteristics; and that the practice that has proved most successful is the purchase by brands warranted by the supplier to meet the purchaser's established standards of performance in terms of the lubricant's effect on Production, Maintenance, Power, and Cost of Lubrication.

Consumer satisfaction, states the report, can best be assured by relying on the integrity of the manufacturer, by looking to his brand as the hallmark of that integrity, by submitting his products to the acid test of performance, and by evaluating his service in the price of his product.

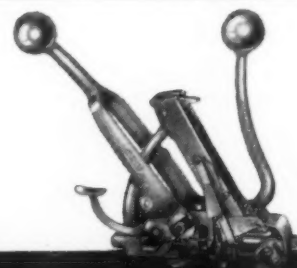
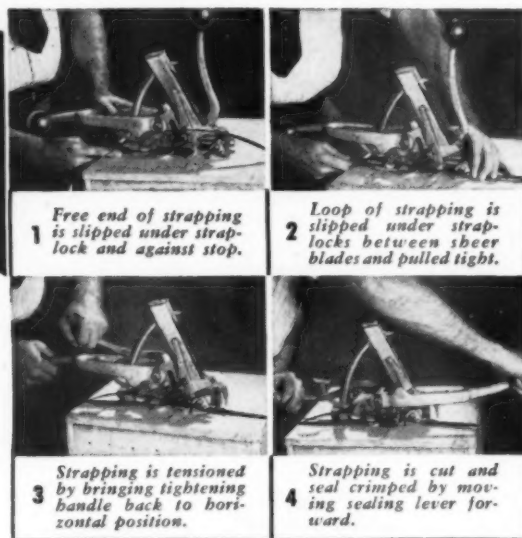
Copies of the pamphlet "Buy on Performance" are being distributed free of charge by the Freedom-Valvoline Oil Company, Freedom, Penna. Requests should be addressed to Department 194.

4 steps... 5 seconds!

that's production strapping with the improved Stanley "ACE" Strapping Tool

● FOUR STEPS take just 5 seconds. Positive spring feed holds a 100 seal clip in magazine for $\frac{3}{8}$ " and $\frac{1}{2}$ " seals and a 75 seal clip for $\frac{5}{8}$ " seals. The "Ace", with a complete line of accessories, is available in

3 sizes to handle the whole range of strapping jobs. Write for full details or demonstration. The Stanley Works, Steel Strapping Division, 144 Lake Street, New Britain, Connecticut.



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STEEL STRAPPING AND CAR BANDING SYSTEMS

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Controlled Quality is the distinguishing feature of every product in the complete Ladish line. Seamless Welding Fittings, Forged Steel Fittings and Forged Steel Flanges . . . all are produced under exacting metallurgical control and rigid inspection of physical dimensions.

Ladish Controlled Quality . . . made effective by one of the most modern and completely equipped metallurgical engineering laboratories in the industry . . . provides complete determination of chemical composition and physical properties of steel together with constant application of proper forging procedures and heat treating.

Thus users of Ladish Fittings and Flanges obtain high dynamic strength . . . uniform toughness . . . and assured resistance to shocks, strains and stresses common in piping installations. Advantages resulting from Ladish Controlled Quality provide the ultimate economy of long life and dependability.

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SEAMLESS
WELDING
FITTINGS



FORGED STEEL
FITTINGS



FORGED STEEL
FLANGES

A COMPLETE LINE PRODUCED UNDER ONE RESPONSIBILITY

Ladish catalogs, to assist in the design of piping installations and the proper selection of fittings and flanges, will be supplied upon request.



TO MARK PROGRESS

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35 Years Ago THIS FOUNDRY FOUND THE ANSWER

How to maintain production while keeping grinding costs down? Today that's a big worry—but even back in 1912 a well-known malleable iron foundry was faced with the same problem, and the management found the answer because they knew where to look for it.

They knew that wheels made by "U.S." were originated in 1863.

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And they knew that "U. S." would come up with the type of wheel that would meet requirements.

This foundry picked U. S. Wheels and has been using them ever since.

Whether you're snagging castings or grinding ball races, there's a U. S. Royalite Wheel engineered precisely to the job—carefully tested in both factory and laboratory.

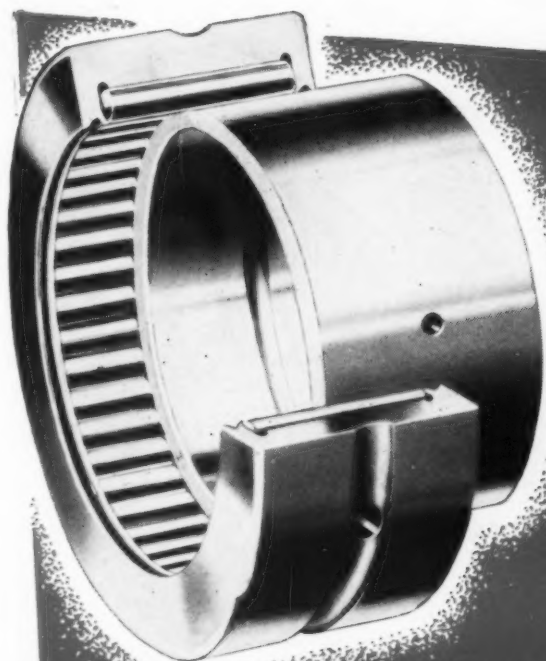
For your own particular needs, you can obtain *in advance* accurate grinding costs with U. S. Royalite Wheels from one of our trained field engineers, who will make thorough tests right in your own plant.

Write to Mechanical Goods Division, United States Rubber Company, 1230 Avenue of the Americas, New York 20, N. Y.

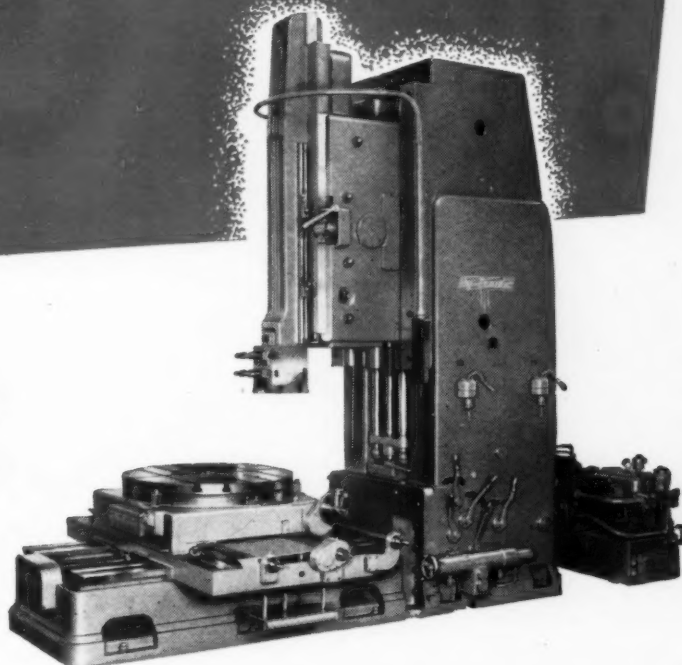
U. S. ROYALITE GRINDING WHEELS

Engineered to your job





Increase Machine Dependability
WITH
**McGILL "SOLIDEND" MULTIROL
PRECISION BEARINGS**



22 McGILL MULTIROL BEARINGS IN THIS ROCKFORD HYDRAULIC SLOTTER

McGILL, the ideal bearing for precision heavy duty applications, proves its dependability in this ROCKFORD HYDRAULIC SLOTTER built by Rockford Machine Tool Co., Rockford, Illinois. At 22 critical points in the feed box, index head, rotary table drive, and rotary feed gear box McGill high load capacity and balanced design insure accuracy and efficiency of this machine. Rivaling the hydraulic ram movement for smooth action, McGill BEARINGS in the feed mechanisms result in unusually fine finish cuts. The longer life of the McGill BEARINGS, due to the rigid construction, and adequate lubrication facilities, improve the performance of the ROCKFORD SLOTTER . . . helps keep maintenance at a minimum.

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Machine tools or any precision machinery needs McGill high load capacity . . . precision accuracy . . . dependability. McGill BEARINGS are manufactured in a full range of standard sizes to suit any application. They include the MULTIROL*, MULTIROL CAM FOLLOWER*, SOLIDEND MULTIROL*, full type roller bearings, and non-ferrous metal retainer ball bearings.

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*T.M. Reg.



Booth 549



BEST



Inspect and examine "Blue Devil" socket screws by any method you choose and you'll find them a precision-made product. They meet dimension specifications in every detail . . . threads are an accurate class 3 fit.

Best materials are used in the manufacture of "Blue Devil" socket screw products. Special alloy steel, made to exacting specifications for size and content — scientific heat treatment by the latest methods.

Best workmanship — Every employee, every machine in the Safety Socket Screw Company plant is geared to the manufacture of "Blue Devil" socket screw products exclusively. As specialists in the manufacture of socket screw products they have acquired the skill and the manufacturing knowledge that make "Blue Devil" socket screw products the best obtainable.

SOCKET HEAD CAP SCREWS • SOCKET SET SCREWS
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Safety Socket Screw Company
4436 N. Knox Avenue
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Please send Free Catalog listing styles, sizes, prices and specifications of "Blue Devil" products.

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SPRING
SAYS...



Product success often begins with the selection of just the right spring. When planning a new product or redesigning an old one, let our experienced staff study your drawings and work with you. Our past experience may help you to manufacturing economy and product success.

No order too large or too small

The U.S. STEEL WIRE SPRING Co.

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CLEVELAND 5, O.

HOW MUCH IS A SQUARE FOOT OF PLANT SPACE WORTH?

\$10 ☐
100 ☐
1000 ☐
MORE ☐

Being an investment, every foot of space in your plant *must* yield a good return.

In the cleaning department this is especially important because production is routed through this space at least once—perhaps several times. There must be no bottleneck.

Detrex standard degreasers and parts washers—some hand-operated, some conveyORIZED—fit into any production line set-up. For the most economical, efficient, and rapid metal cleaning in the floor space available, consult a Detrex field representative today.

I-171R



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Do you want
your shipment to:



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...On to your customer?

When will it arrive? How will it look? The impression it makes on your customer depends on how it is marked, addressed, shipped. We have specialized in shipping room methods, supplies and equipment for 54 years. Get our complete catalog. See your telephone book under “Stencil Cutting Machines”; or write: Diagraph-Bradley, Dept. K, 3745 Forest Park Blvd., St. Louis 8, Mo. World's oldest and largest stencil machine manufacturer.



Fine Forgings for Fine Machines NATIONAL DROP FORGINGS



Bonis Bros. Fur Machinery Corp.,—pioneers in specialized service to the fur industry—is acknowledged throughout the world as makers of outstanding machines, each designed for a particular purpose. They are noted for smoothness, efficiency and economy unattainable by the unevenness of hand operation.

In these fine machines National forgings are used because they are made with exceptional skill of selected steel of maximum fatigue resistance, strength and toughness. The fibre-like grain structure is reinforced at areas of greatest wear and impact.

Write us today for booklets describing our standard line of SAE yoke and rod ends, container handles and knife blades, etc.—and send us your inquiries for custom drop forgings.

The Trademark “N” is your guarantee of Fine Quality Forgings.

THE NATIONAL LOCK WASHER CO.
DROP FORGING DIVISION
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GEARS

made to
ORDER

SPUR

Straight, helical, and internal. Sizes from 16 pitch, 1½" dia. (approx.), to 1½ pitch, 36" dia. (approx.).

HERRINGBONE

Sizes from 1½" to 15".

HYPOID

Sizes from 1½" to 28" dia. (approx.).

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Sizes from 16 pitch, 1½" dia. (approx.), to 1½ pitch, 28" dia. (approx.).

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Sizes from 16 pitch, 1½" dia. (approx.), to 1½ pitch 28" dia. (approx.).

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Sizes from 16 pitch, 1½" dia. (approx.), to 1½ pitch, 21" dia.

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Worms to 7" dia.
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Lengths to 45"
Diameters from 1" to 6".

DIFFERENTIALS

Complete units.

NO MATTER how special your requirements may be, Fairfield can help you solve your gear production problems efficiently . . . and economically. Fine manufacturing facilities, large production capacity, and some twenty-eight years of engineering experience have made Fairfield a leader in supplying gears for tractors, trucks, buses, machine tools, engines, and all kinds of automotive, aviation, agricultural, construction, marine, and industrial equipment. CHECK WITH FAIRFIELD ON YOUR NEXT GEAR REQUIREMENTS.

FAIRFIELD

MANUFACTURING CO.

329 South Earl Avenue
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For FINE
GEARS

FAIRFIELD



8 LBS. OF MIONE HAND SOAP (With Lanolin)
1 MIONE ALL-METAL SOAP DISPENSER

ALL FOR
\$3.25
POST PAID

HERE'S your chance to try Mione in your plant washrooms. Mione Powdered Hand Soap, the pore-deep cleanser, now contains Lanolin to provide extra protection for workers' hands, and to help guard them against occupational skin diseases.

The Mione All-Metal Dispenser is simple in design, easy to operate, attractive and sturdy. When filled with fast-acting and thorough Mione, you've got an unbeatable washroom combination. Send for your Mione Introductory Washroom Unit — TODAY.

Merely clip this ad to your letterhead, sign your name and mail. We'll send your Unit and bill you later.

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COLLINGDALE 10, PA.

BY THE THOUSANDS OR MILLIONS!

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SOFT PAD FELT

and Many Other Materials

Prompt Delivery — Fel-Pro's plants provide ample facilities for supplying your die cuts, as and when you want them. Fel-Pro has the experience and skill to make special dies, any size, shape or design. We have the materials, either conventional, with improved qualities . . . or new synthetics with special characteristics to meet your requirements. Fel-Pro supplies any quantity Die Cuts to manufacturers for sound or vibration dampeners, bases, coverings, insulators, product parts, etc.

FREE FOLIO containing samples of 53 actual Die Cut, Washer, Gasket and Packing Materials, yours for the asking. Write to

INDUSTRIAL GASKETS AND PACKING DIVISION OF
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FEL-PRO

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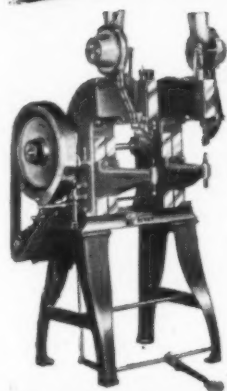
WHATEVER YOU FASTEN . . .

COMPOSITION TO COMPOSITION FABRIC TO FABRIC WOOD TO WOOD METAL TO METAL

OR ANY COMBINATION OF THESE MATERIALS . . .

Chicago AUTOMATIC RIVETING

FASTENS IT RIGHT . . . AND FASTENS IT FAST



• In Chicago Automatic Rivet Setters from 1 to 4 tubular or split rivets are fed, inserted and clinched in a fraction of a second with each operating pedal release. Adjustment on some models permits handling different sizes of rivets. Riveting machine also adaptable for eyelets, grommets or drive screws.



FREE Fastening Analysis
Your output may be increased and cost reduced if you investigate. Send sample assembly and blue print.

Chicago Rivet
CHICAGO RIVET & MACHINE CO.
9607 W. Jackson Blvd., Bellwood, Ill. (CHICAGO SUBURB)
Tubular and Split Rivets In All Rivet Metals

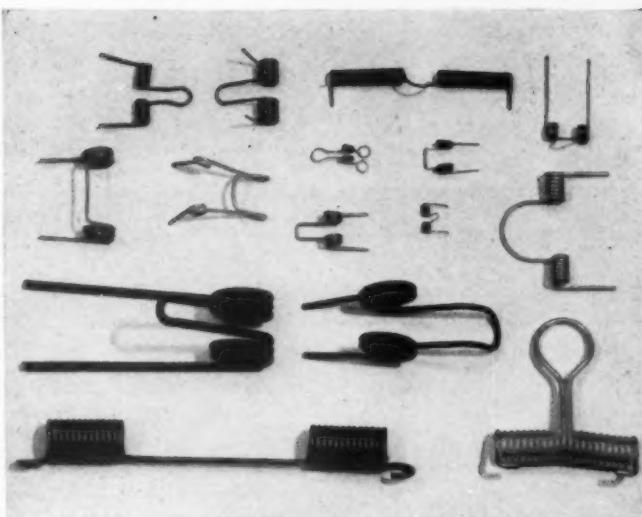
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All over America shippers know Orange Core sealing tape. They like its speedier, stickier, sturdier quality . . . the way it steps up production and protects shipments. Orange Core will do a better job for you.

ORANGE CORE
*Moistens Fast
Grips Fast
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Sealing Tape

MOORE & THOMPSON, Div. Hudson Pulp & Paper Corp., 220 E. 42nd St., New York 17, N. Y.



Only the Best SPRING is the Cheapest!



On springs, you can always find a lower price, but the few extra pennies you pay now, for better springs, will come back later in dollars, in the *plus* service which your product delivers to your customers. We never dive overboard for the bottom price—we want the kind of customers who are willing to pay us the extra pennies for the extra dollars in value received. Our prices may never be the lowest, but they will be *in line*, because modern shop practices, up-to-date equipment, and skilled workers enable us to be highly competitive.

At Reliable, quality is actually a working motto, not just a catch-phrase. On all types of springs, wire forms and light stampings, Reliable serves a discriminating trade, constantly increasing, which has the right idea of economy on these products.

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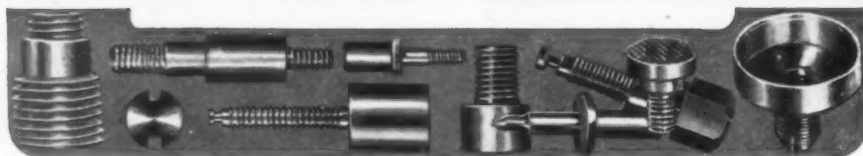
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We are in position to give prompt service on Peck Springs and Screw Machine Products. Your specifications, sketches and estimate requests will receive our immediate attention.

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THE PECK SPRING COMPANY

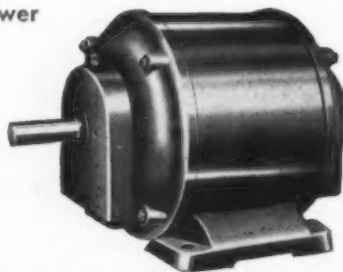
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PLAINVILLE, CONN., U. S. A.

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**ANY MOTOR, check
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ADVANTAGES**

- ✓ Wide Adaptability—sizes 1/2 to 75 h. p.
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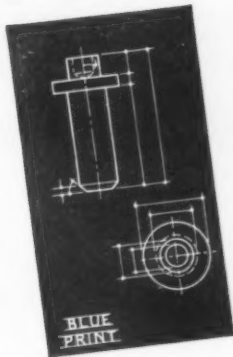
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Special heads, threads and finishes on any metal or alloy adapted to cold upset. Weekly output: 25,000,000 pieces. Many specials, suggesting production savings for you, illustrated in latest catalog. Includes weights per 1M standard pieces, dec. equivs. of fractions, other purchasing and engineering helps. Write for Catalog 19.

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DETECTO SCALES

There's a precision-accurate Detecto Scale for your specific weighing and counting need. The Detecto helps increase production, yet assures you maximum accuracy by making slightest weight discrepancies immediately visible.



DETECTO ALUMINUM SPEED SCALE

For increased production at lower cost! One operator with one Speed Scale does as much as two operators with ordinary scales. Sturdy, precision built, super-accurate. Ends overweight losses.

Write for circular.



DETECTO • SCALES • INC.

MAKERS OF FINE SCALES SINCE 1900

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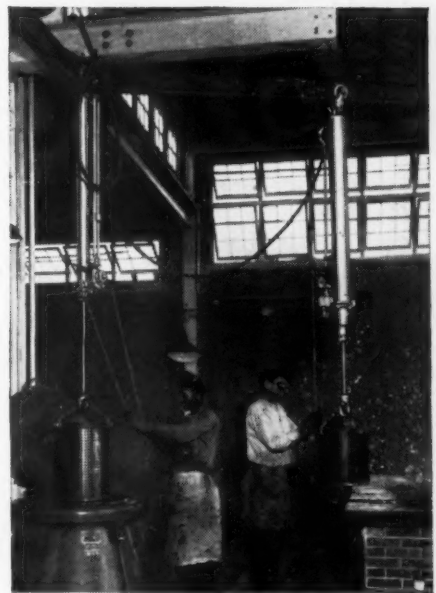
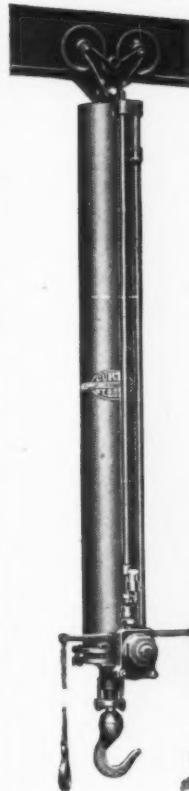
SCALE ENGINEERS IN ALL PRINCIPAL CITIES

SAVE TIME— REDUCE LABOR COSTS

for Lifting, Pushing
or Pulling with

CURTIS

Air Hoists



*Check these
advantages:*

- ✓ Low first cost, lowest operating expense
- ✓ Smooth, fast, accurate control
- ✓ Finger-tip control
- ✓ Light weight, immune to overloading
- ✓ Capacities up to 10 tons

For full information on Curtis Air Hoists, Air Cylinders and Air Compressors, write for Form C-7.

CURTIS PNEUMATIC MACHINERY DIVISION

of Curtis Manufacturing Company

1908 Kienlen Avenue, St. Louis 20, Missouri

H543A

CURTIS PNEUMATIC MACHINERY DIVISION

of Curtis Manufacturing Company

1908 Kienlen Avenue, St. Louis 20, Missouri

Please send me Form C-7 on Curtis Air Hoists, Air Cylinders and Curtis Air Compressors.

Name.....
Firm.....
Street.....
City.....Zone.....State.....

93 Years of Successful Manufacturing

LETTERS . . .

WORK LOAD PER BUYER

I feel that you are in the best position to give me the following statistics. I am interested in securing the average number of items purchased per average buyer and the average dollar value of the items purchased, per buyer. What should the average dollar value of purchases be, per buyer in a firm whose purchases amount to \$8,000,000.00 per year, covering 5,000 items? What should the average number of items be per buyer?

—W. A., Ohio

We do not believe it is possible to generalize on work volume per buyer in a purchasing department on the basis of number of items or dollar value, or that it would be practicable to set up a department strictly according to either basis, because of the varying volume and importance of the several items in any given operation. We have made a number of attempts to correlate these factors, and the closest approximation that we have been able to make was reported in our August and September 1944 issues. This is based on dollar volume of purchases, and shows an average of our findings at that time. It does not take into consideration the number of items bought. We have seen a two-man department handling a list of 8,000 items, and have also seen cases where the chief buyers concentrate on three or four major commodities. The usual way of assigning this responsibility is to set up the major groups of related commodities, assigning them to as many buyers as required, each specializing in a general field such as electrical supplies, etc.; and then take the miscellaneous items that do not naturally fall into any of the main categories and distribute those assignments so as to arrive at an approximately even work load for the various buyers and according to their capacity.

As to the duties of the average purchasing agent, see Section No. 1 of "Basic Principles of Purchasing," published serially in *PURCHASING* several years ago and now available in brochure form, 100 pages, price \$1.—Ed.

STEEL PIPE

Your "Product Delivery Information" section in a recent issue gave a delivery estimate of three months for steel piping. From previous experience, this was rather a surprise to us, but we hopefully made further

inquiries. However, we are still unable to obtain any quotation whatever from any of our normal sources of supply. The material will be purchased for export. What suppliers will be prepared to furnish steel pipe, bevelled or plain ends or even flanged, on three months delivery?

—M. C. Archibald, Purchasing Agent
Montreal Engineering Co., Ltd.
244 St. James St., W.
Montreal 1, Canada

Our "Product Delivery Information" section is made up of current data supplied to us direct by manufacturers. Admittedly, three months delivery date on pipe does sound over-optimistic, but that is what our sources reported to us and your letter is being referred to them.—Ed.

PURCHASING SERVICE

The principals of our organization are purchasing agents with more than 20 years of well diversified experience respectively in both purchasing and production. At the present time we are representing several leading organizations in the foundry field and enjoy a profitable business. However, it is our desire to institute a purchasing service for industrial organizations.

We realize that a venture of this type while it may have many fine points, it will also meet with objections for reasons which are quite obvious. And yet, we feel that a service of this kind would be of invaluable assistance to small as well as to large organizations. To the small organization not in a position to employ fully experienced purchasing personnel, this service should be welcome. To the large organization, our service would be in the form of a "supplemental" one to replace inexperienced or partially experienced clerks. It is our intention to charge a fee for this service on a monthly basis.

It has occurred to us that you may be in a position to advise us.

—R. C. & Company
New York

There is an opportunity for such a service, with good advantages to the smaller company now having no purchasing department nor large enough to warrant one. Several purchasing companies now operate in the New York metropolitan area and are well established.

The major problem is establishing a proper basis of remuneration. In the past this has been the principal stumbling block, but as has been

demonstrated by the long and successful operation of some purchasing services, the obstacle is not insurmountable. But we doubt that you will be successful in selling your service to companies with purchasing departments.—Ed.

"WELCOME, SALESMEN"

In the July issue of the Advertisers' Digest I recently came across a condensation of "Welcome, Salesmen" which apparently appeared in your magazine not too long ago.

Inasmuch as I am currently engaged in compiling data for a booklet similar to those mentioned in this article, I am very much interested in reading the original article.

—H. F. Taylor
Advertising Department
Scott Paper Company
Chester, Pa.

See "Welcome, Salesmen," in March 1946 *PURCHASING*, also "Public Relations Begin in the Reception Room," March 1945 issue, and "First Aid to the Visiting Salesman," November 1945 issue.—Ed.

BOUQUET FOR "BUYER'S NOTEBOOK"

I like your "Pages from a Buyer's Notebook."

* —Gerald S. Wilson, Purchasing Agent
Wilson Rubber Co.
Canton, Ohio

QUOTATION FORMS

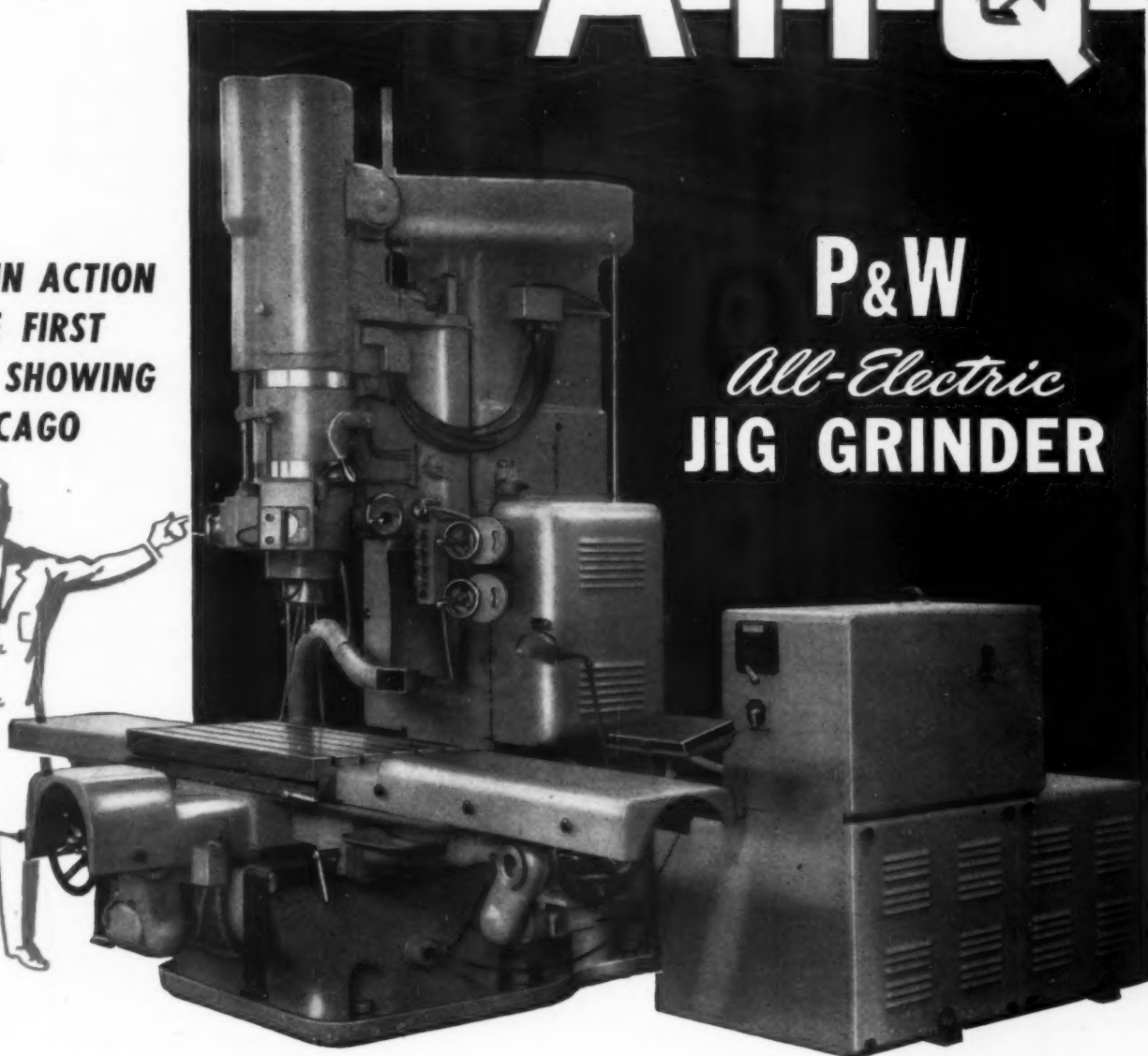
If you have such, we would appreciate receiving samples of forms for requesting quotations from vendors. We have gone through several issues of *PURCHASING* magazine, but have been unable to locate specimens of forms on this subject.

—E. F. Dolin, Asst. Purchasing Agent
Inspiration Consolidated Copper Co.
Inspiration, Arizona

Dozens of inquiry forms have been illustrated in the monthly Forms Forum section of *PURCHASING* and in feature articles. Clippings are being sent you. The forms are usually similar to purchase orders, but are headed boldly, "Inquiry — Not an Order," "Request for Quotation," or otherwise to avoid confusion with orders. Occasionally, the inquiry form is printed on onion skin, to permit as many as ten requests to be typed at once.—Ed.

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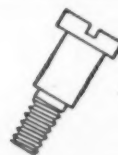
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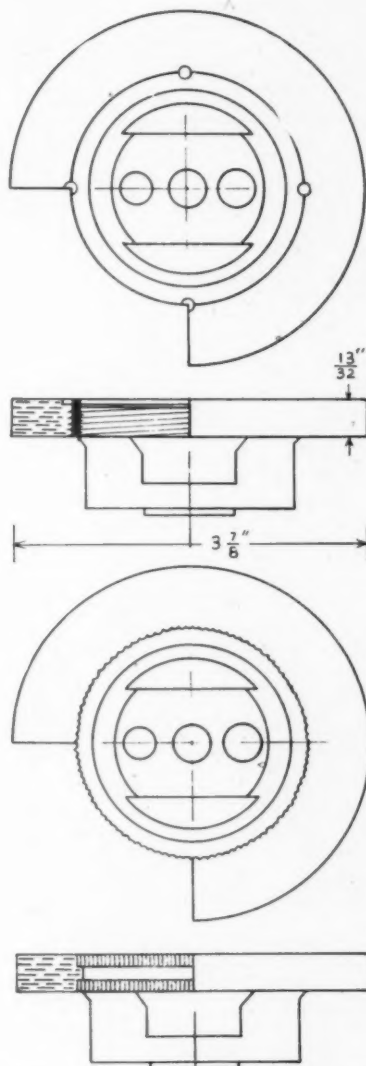
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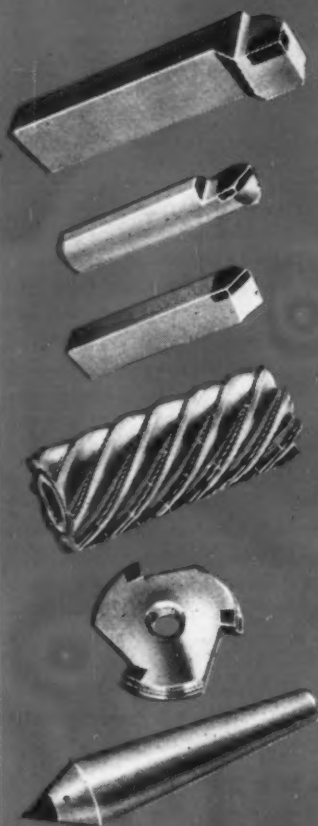
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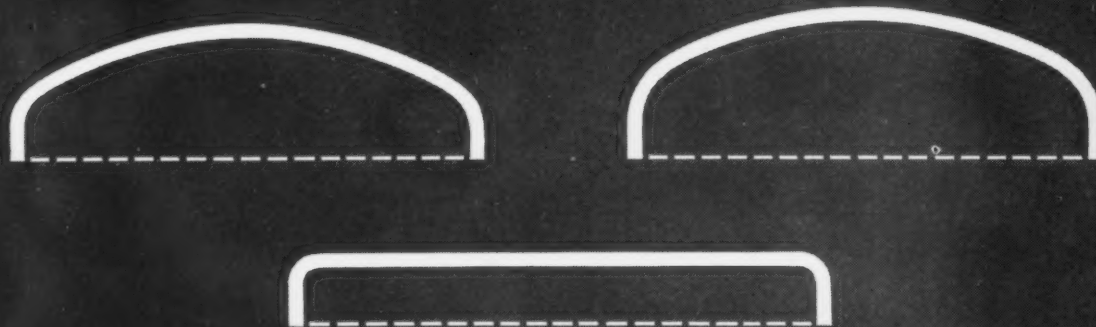


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HEADS



FOUR INCHES TO OVER EIGHTEEN FEET IN DIAMETER

thread checking time and costs

Reduced!

Only two instruments are required in many plants to solve external thread checking problems—Sheffield's new Adjustable Leadchek and the Sheffield Visual Gage with thread checking accessories. Checking is quick, accurate and inexpensive.

Write for detailed information on these instruments—and for other thread gages not illustrated.

1 NEW ADJUSTABLE LEAD-CHEK for range of $4\frac{1}{2}$ to 60 threads per inch and for work up to 2" in diameter, equipped with a "tenth" dial indicator for production use or with an "Electrigage" for the toolroom where tolerances are as close as .0001". Write for Inst. No. 27.

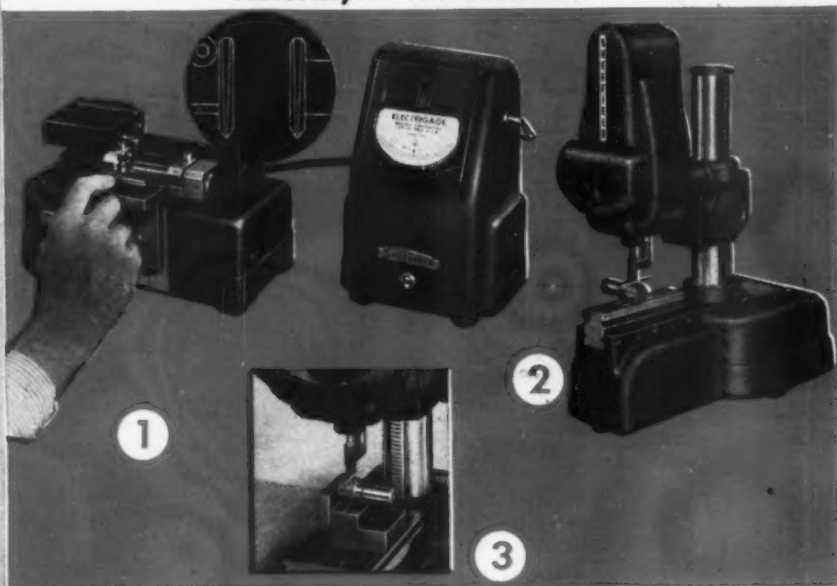
2 VISUAL GAGE with thread checking attachment for three wire checking of PITCH DIAMETER. Write for VG-500-45.

3 SINE BLOCK used with Visual Gage for checking MAJOR DIAMETER, PITCH DIAMETER and TAPER of tapered pipe threads up to 3" in diameter. Write for VG No. 4.

4 VISUAL GAGE with Ball Point Accessory for a rapid 2-point check of PITCH DIAMETER of parts up to 1" nominal diameter and with an accuracy comparable to the three wire method. Parts up to 2" can be handled with larger accessory. Write for VG No. 2.

5 THREADCHEK for the rapid inspection of LEAD, PITCH DIAMETER, THREAD ANGLE, ROUNDNESS, TAPER and STRAIGHTNESS, especially for studs, bolts and other threaded elements produced in large volume. Write for Inst. No. 10.

Accuracy in the toolroom



Speed with accuracy in production



Chek with SHEFFIELD on thread inspection equipment

the *Sheffield* corporation

2587

Dayton 1, Ohio

U. S. A.



Sheffield's principal products include Gages, Measuring Instruments, Machine Tools, Threading Tools and Contract Services. Standard Gages shipped within 24 hours.



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For years, motor users complained that no one motor had all the features they wanted most.

Westinghouse engineers surveyed motor users to find out exactly what they needed . . . and then tailored an entirely new motor to fit those requirements.

The result is the new, outstanding Life-Line Motor—the first truly all-steel motor made available to industry. Packed in its thick, protective steel housing are more benefits asked for by motor users than any other motor made today:

ALL-STEEL PROTECTION. All frames, feet and brackets are **HEAVY STEEL.**

UP TO 35% LESS SPACE PER HP. Life-Line Motors occupy less space per horsepower than any other standard motor.

UP TO 134% MORE TORQUE PER LB. As much as

134% higher starting torque per pound of motor . . . up to 116% higher maximum torque.

NO LUBRICATION NEEDED FOR 5 YEARS. Bearings are prelubricated . . . sealed against dirt and moisture.

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NEW, SLEEK LINES. Sleek lines and smooth finish discourage dust and dirt accumulations . . . harmonize with modern machine design.

Write for details. Westinghouse Electric Corporation, P. O. Box 2025, Buffalo 5, New York.

J-21422



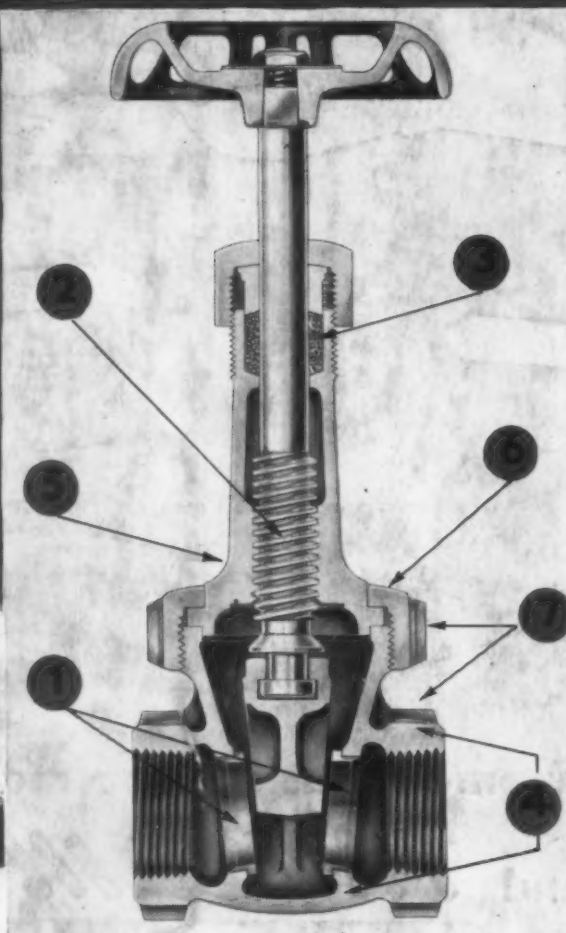
Westinghouse
 PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Life-Line motors

IT'S

NEW ... IT'S FAR AHEAD — IN DESIGN—IN DURABILITY

JENKINS FIG. 270-U BRONZE GATE VALVE



1. "MONEL" SEAT RINGS EXPANDED IN BODY The seat rings, expanded into place in the body, are equivalent to integral faces. The "MONEL" metal used is about $2\frac{1}{2}$ times the hardness of valve body bronze — provides exceptional resistance to erosion and corrosion.

2. LARGE SPINDLE THREADS LAST LONGER The threads on the traveling spindle are exceptionally long and large in diameter. This reduces wear to a minimum and insures easy operation. Spindle metal is hard, tough manganese bronze.

3. DEEP STUFFING BOX—MORE PACKING Deeper than most 200 lb. gate valves, it holds more packing. Keeps stuffing box tight around spindle with less friction, and permits spindle to be turned with less effort.

4. LIBERAL BODY DIMENSIONS ADD STRENGTH Made of 35,000 lb. tensile strength cast bronze — has full length of pipe threads and liberal clearance between threaded ends and diaphragm wall. Union assembly reinforces and strengthens body neck.

5. EXCEPTIONALLY RUGGED BONNET Projection on bottom assures snug fit into neck of body. Large diameter Acme threads, with long bearing, assure improved wear resistance. Machined bevel on underside matches beveled shoulder on spindle for back-seating under pressure and protecting spindle threads when valve is wide open.

6. HEAVY BONNET RING Union Bonnet joint withstands exceptionally high hydraulic pressures. Liberal thread engagement assures assembly that can be made tight and kept tight after repeated disassembly.

7. BODY AND BONNET RING LUGS Rugged, sturdy lugs of novel design on body ends and bonnet ring permit repeated application of conventional wrenches.

AGAIN JENKINS PRACTICAL ENGINEERING SETS THE STANDARD FOR VALVE ECONOMY

• IF ANY PART of the seating combination is to eventually need replacement, why not have it the most accessible part—the wedge rather than the seat? It's easier, quicker, cheaper to slip on a new wedge, than to install a new body!

That's the principle on which Jenkins Engineers designed the new Fig. 270-U Bronze Gate Valve, with a high-quality bronze wedge seating

against MONEL seat rings expanded in the body. With this sensible design, the wear affects only the most accessible part—the bronze wedge—which can be replaced by simply slipping it off the stem and slipping on a new one. Prolonged tests, in toughest service, prove it the best seating combination to beat wear, reduce care.

This new, better Fig. 270-U will

give you unequalled economy in any service requiring a 200 lb. pressure Bronze Gate, and especially under severe conditions, such as in oil refineries, dye houses, chemical, food, and rubber plants.

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